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of the Amateur Entomologists' Society

Volume 63 • Number 452 February 2004

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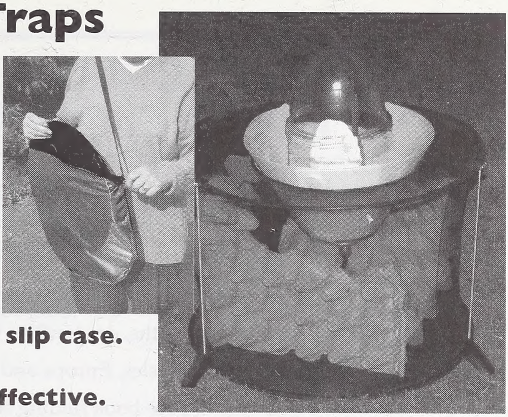

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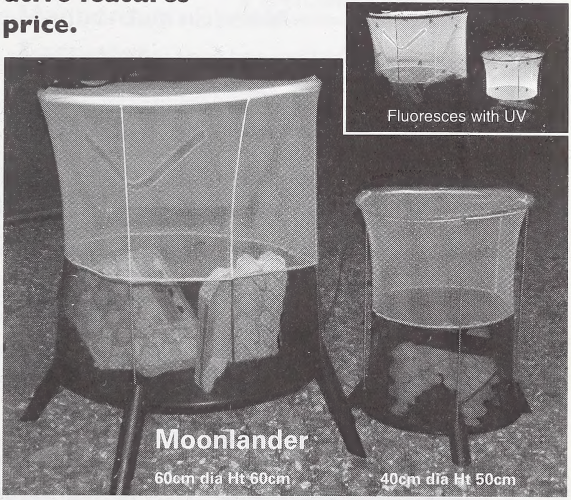

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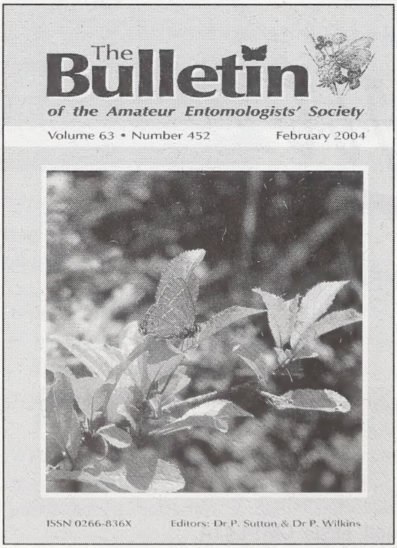

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ISSN 0266-836X Editors: Dr P. Sutton & Dr P. Wilkins

Photograph: James Stewart

Digital decade

The next four editions of the *Bulletin* will show pictures of insects captured using digital technology. The cover of this edition shows a picture of the Black Hairstreak *Satyrium pruni*, taken by long-standing member, James Stewart (5857) at a site in Oxfordshire on 20.vi.02, using an Olympus 3030Z digital camera. This rare and elusive species is now confined to around 45 sites in Britain, predominantly in woodland situated on a belt of heavy clay soils between Oxford and Peterborough in the East Midlands. The Black Hairstreak spends much of its adult life feeding on aphid honeydew in the canopies of trees (especially Ash and Field Maple) and is seldom seen, but can sometimes be closely observed on the rare occasions that it descends to feed on the nectar of flowers at ground level.

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Editorial

Welcome to the first *Bulletin* of 2004! I hope that the coming year is rich in terms of entomology. We are aiming to continue to improve the quality of the *Bulletin* in the coming year.

This is a short editorial, since it is followed by details about the Data Protection Act from our registrar. However, it is important to note the following contact details for matters concerning the *Bulletin*. Until further notice, hard copies of articles or correspondence should be sent to the PO Box.

The preferred email address is phil@bombus.freeserve.co.uk. However, if you have large files (pictures, etc), please email first, as an alternative address can be supplied which can cope better with larger attachments.

We currently have a better stock of articles than we have had for a long time. So if you have recently sent an article, please be patient – we will publish them all. We are aiming to include pictures with as many articles as possible, so if you have appropriate pictures (in any format) please send them with your articles.

Phil Wilkins

* * *

From The Registrar

Data Protection Act – In order to fulfil the requirements of this act I must advise members annually of the details held on computer database and the use made of them.

Currently the information we hold comprises – name, address, telephone number, email address, Date of Birth, interests, payments made, and membership category. Additional information is held regarding mailing details, correspondence etc. If any member objects to these details being held, would they please get in touch with me.

The information is used for the following purposes:-

To prepare mailing labels for the ***Bulletin*** and ***Bug Club Newsletter***. Also labels for other mailings and correspondence as required.

For the preparation of statistics for use by the Council.

The publication of Membership Lists. These will only include details of name, address, interests, and, in the case of Junior Members, the Membership Class. Please note that telephone numbers and e-mail addresses are ONLY passed on to Council and Committee members when a specific request is made. Such details are not passed to other members. **Individual members may request specific lists**, such as names and addresses of members in a specific area, with or without interests included. A minimum charge of £1.50 is made to cover the additional costs of stationery and postage involved.

Membership List – it is hoped to produce one as soon as adequate funds are available (production costs over £2,000). It should include an alphabetical list of names, addresses and up to three interest categories (space prevents the inclusion of more). It should also include a list of members' names under specific interests, and members' names in individual countries and UK counties. (It is for the latter reason that county name is always included in the address, despite it not being essential in most cases). The restriction to only three named interests is to make the interest lists manageable, since these will help members communicate with others of similar **main** interest areas. I must emphasise that the ONLY reason a list has not been produced is that of cost.

Change of Address – the mailing labels are produced a month in advance in order to notify the printer the number of each publication that need be printed and to allow sufficient time for the envelopes to be prepared. (This is a more tedious task than previously because there are at least three different categories of mailing – ***Bulletin*** alone, ***Bulletin*** plus ***Bug Club Magazine*** together (for family membership), and ***Bug Club Magazine*** alone. These are further separated into Overseas and UK.) This can mean that if I am notified of the change of address AFTER the mailing labels are produced, then the mailing will go to the previous address and there is **no way of preventing this**. It also means that if a redirected envelope is used to notify change of address, by the time I receive it via the PO Box, which can take up to four weeks, or even more, the next mailing label will also have been produced for the previous address! It is therefore in members' interests to notify me as to the new address, and the date for which it becomes effective, as soon as possible after the details are known to the member. Members may notify me directly to my home address, if they wish – Nick Holford, 8 Ruddle Way, LANGHAM Rutland, LE15 7NZ (Tel. – 01572 723532). I can also be contacted by email (nick@fivecon.force9.co.uk). In notifying change of address, please be certain to include your membership number, which is printed after the name on the mailing label. This makes finding your record much easier.

First names – I am trying to make communications more personal by using first names. This is already done in most cases. Please try to remember to write it onto the renewal slip before sending it in.

Payment by cheque – when paying by cheque, if the member's family name is different from that on the cheque, please write the member's name on the back as this helps considerably when checking that payments have been entered correctly. It would be helpful if the membership number was written on the back as a matter of course. PLEASE do not staple cheques to the form, these require a considerable amount of time to remove, and when dealing with about 1400 cheques in the space of two months, any saving in time is a great boon! Thank you.

Nick Holford, Registrar

* * *

The Insects – now appearing at Glastonbury...

by Clive Betts (4976)

IT Services, St Luke's Campus, University of Exeter EX1 2LU.

Having featured clubbing-capital Ibiza in a short article last year I have found an excuse to pen a quickie featuring Glastonbury, home (sort of – its actually a few miles to the East) to the internationally renowned festival of "contemporary performing arts", as the publicity says.

I am afraid entomological highlights from the Festival itself are few but thought it worth recording one particular observation from 2002. Camping in the rich Somerset farmland to the west of Glastonbury that comprises the Festival site, I remember seeing a number of at least two different stoneflies (Plecoptera), various damselflies (Odonata: Anisoptera) and mayflies (Ephemeroptera) around the lush hedgerows in the quieter corners of the site. The stoneflies I noted in particular, though the adults are hard to identify unless practised (see Croft, 1986 and Corke, 1999).

The presence of stoneflies was especially interesting since one of the problems of such a concentration of humanity (150,000 revellers on what is normally about 4 Km^2 of rough grazing land) is the pollution of natural water-ways. Stoneflies are good indicators (in the most simplistic manner) of clean, well-oxygenated water, so my observations in 2002 tentatively suggest that between the festivals at least some of the local streams do manage to recover from any pollution. Prevention of water pollution featured strongly in the conditions for the granting of the licence this year and has always concerned Mr Eavis, the site owner and Festival originator. It occurred to me that, since inspections of waterways (including invertebrate records) may be a critical factor in determining future licence applications, entomologists might well help keep this festival alive (or not, as the case may be)!

Back now to the town of Glastonbury where, at the start of May, I was having a coffee in the sun-drenched gardens of a small café off the High Street. The buildings in this part of the town are old (pre-Victorian) and constructed from stone with a soft mortar filling the large gaps between the irregular blocks. As the morning grew warmer I became increasingly distracted by insects flitting past me towards one of the rough walls that enclosed the courtyard.

My long-suffering (and very understanding) companion gave me the necessary freedom to watch more closely in between our coffees and conversation. On closer examination I could see numerous holes of varying sizes dotted all over the five or six metre length of the wall. Although some were occupied by spiders most appeared to be vacant, but were in fact being used as nest sites by a variety of solitary bees.

In the space of the next hour I spotted a number of bees entering and leaving these holes: two *Anthophora plumipes*, three *Osmia rufa* and two *Coelioxys inermis* females with the distinctive pointed tip to the abdomen. *Anthophora* and *Osmia* commonly nest in holes in walls, as do others like leaf-cutters, *Megachile* spp., the host for which the cuckoo bee *Coelioxys* was probably searching. Although all of these bees are widely distributed (records from the North of the UK are scarce but this may be due to under-recording – Edwards, 1997), they are by no means prolific and are always a pleasure to observe.

Their occurrence in such an urban setting was not surprising since many solitary bees visit garden flowers and make nests in crumbling or discarded masonry, drilled holes in building timber or sometimes just gaps in door frames and even key holes. Indeed *Megachile* is notorious for "spoiling" prize rose bushes by cutting the leaves to line the cells of their nests, whilst *Osmia rufa* has been accused of demolition, by mining out soft mortar from between brickwork to the point of collapse!

Back in the courtyard, on a nearby flowering bush (an exotic I did not recognise), I also saw at least two different species of nomad bee (*Nomada* spp., cuckoo bees like *Coelioxys* spp.) and what I thought were numerous *Andrena haemorrhoa*. The latter tends to nest in the ground so I would be surprised if they were also making use of the excellent tower-block accommodation offered by the wall. The exposed soil around the edge of the courtyard, which had dried with a crumbly grey surface, was a more appropriate home for *Andrena* but I did not see any holes.

Exposed and compacted soil, hole-y walls or rotting tree stumps are all inviting to solitary bees and wasps: often most conspicuous on sunny days April-June. I have *Andrena* spp. nesting in my lawn in Exeter, scoring a point (in my book anyway) for those of us "lazy" gardeners who do not have bowling-green lawns! A pile of old air-bricks in my garden continues to attract dozens of *Osmia rufa* and the aerobatic *Anthidium manicatum*, a master of hovering and rapid aerial manoeuvres. If you want to attract solitary bees and wasps you can also buy "insect homes" (from some garden centres, Wildlife Trusts and similar outlets) that consist of cut plant stems or wood drilled with different diameter holes that appeal to different bees and wasps (and other insects e.g. ladybirds).

Chance observations like those I made at the Festival or in the coffee shop are the bread and butter of amateur entomology but proper identification can prove problematical. Although I used Chinery (1986) to roughly check my observations, this well-illustrated book can be misleading when it comes to identifying individuals that are part of such diverse groups as the solitary bees (or even stoneflies come to that).

After 30 years experience I have some confidence that I have got the generic names of the bees correct but I am not at all sure about the species identity of, for instance, *Andrena haemorrhoa.* Similarly the quality artwork in Else (1999) suggests that the *Coelioxys inermis* I thought I saw could equally be *C.elongata.* Without a voucher specimen to identify (or the knowledge and field-experience of an expert – see BWARS below) species-level identity would not be safe to assume. This is largely true of all insect Orders, although many distinctive species can be identified with some confidence after only a little experience (eg common butterflies, some dragonflies, some bumblebees and the larger beetles).

Corke (1999) deals with this issue and, more importantly, provides an excellent guide to many of the most appropriate works for all the Insect Orders and their component groups.

In terms of finding out more about solitary bees there are unfortunately only a few reference works and the most authoritative are really only for the very keen! Else is currently writing the book on solitary bees (to be published by the Ray Society) but O'Toole and Raw (1991) provides an excellent, lighter read and good introduction. I would also recommend Betts (1986a) for guidance and introductory information and Betts (1986b) for a surprising amount of natural history about all the UK species (some names will have changed since this was published). I should mention that their relatives, the solitary wasps, are covered very well by an excellent Naturalists Handbook (Yeo and Corbet, 1983).

Finally if you are really interested I would recommend becoming a member of the Bees, Wasps and Ants Recording Society (BWARS) whose members include leading authorities on all aculeate (ie those that can sting) Hymenoptera. BWARS publishes an excellent starter pack, runs field trips and meetings and is a centre of excellence on all aculeate matters. See: http://www.bwars.co.uk for more details or write to: BWARS Membership Secretary, Mr D. Baldock, Nightingales, Haslmere Road, Surrey GU8 5BN.

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* * *

A Second Staffordshire Trichoptera Record

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke-on-Trent, Staffordshire, ST3 7AY.

On 29th September 2002, while light trapping for moths in my garden, a caddis fly came to the light. It looked like *Halesus radiatus*, for which there is no computerised record for the county. I took the specimen to the Potteries Museum and Art Gallery, Hanley, Stoke-on-Trent for microscopic examination by Mr Craig Slawson. It turned out to be a male *Halesus digitatus.* This species is very closely related to *H. radiatus.*

H. digitatus is quite a common caddis fly in Britain, from streams and rivers. Classic sites for it are small wooded streams. There is only one previous computerised record for this species in Staffordshire, from Berry Hill in 1983. Trichoptera is a much under-recorded group of insects in the county. In future *H. digitatus* may prove to be more common in Staffordshire than records suggest.

I would like to thank Mr Craig Slawson for the identification of this species.

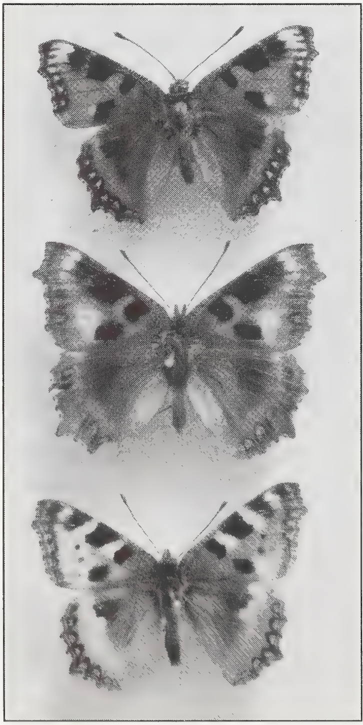
Aberrations of the Small Tortoiseshell

by Mike Brown (11834)

13 Milifield, Thornbury, Bristol, BS35 1JL.

During summer 2003, my nine-year old son and I collected a small brood of Small Tortoiseshell larvae *(Aglais urticae)* from a local nettle bed. Having previously kept various species through to pupation but then having to wait until the following spring for them to emerge, he wanted to see things happen a little quicker, so I thought the Tortoiseshells would be ideal. Sure enough, we were able to rear a good percentage through to adulthood within a month or so - though some were lost to parasitism. For my part, I was interested in whether the brood might contain any aberrations, as I have always been interested in, and watchful for, the spectacular varieties that this species is known to produce.

Alas, it was not to be, all being of the typical form but it did remind me of the three aberrant specimens I have been lucky enough to come across in the past, shown in the accompanying picture.



At the top is a specimen captured in September 1968 at Kingsdown, Bristol. I believe it is ab. *seminigra,* though it does tend towards ab. *semi-ichnusoides,* which I think is the middle specimen figured, which was taken at Midsomer Norton, Somerset, in September 1983.

The third aberration was found in Bristol in August 1976. The left-hand side is ab. *lutea,* the right-hand side is typical. Possibly the hot weather that year was a factor in producing this. Such conditions tend to give rise to specimens lighter in colour than the norm. Perhaps the pupa had been exposed to differing temperatures on either side? The warm weather in 2003 might perhaps have been expected to influence the general ground colour of that year's generations, but I saw no evidence of this.

The species seemed quite abundant, in South Gloucestershire, in 2003 – a welcome sign after a few years of noticeable relative scarcity and I always have a good look every time I see one – it may not be "just another tortoiseshell" on the *Buddleia*, after all!

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A Preference for Sugar

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke-on-Trent, Staffordshire, ST3 7AY.

For many years I have been light trapping, with a number of home-made light traps. The best trap was the mercury vapour lamp. It was run for many years in my garden, some nights with large catches. I ceased running the m.v. lamp after complaints from my neighbours, saying it was too bright a light. So I moved on to less bright home-made models, or just leaving my kitchen light on, with the window blinds open.

Over these years I noticed some odd findings with some commoner species of moths that I would expect to be common at light. The Small Angle Shades, *Euplexia lucipara* (Linnaeus) is a common moth in Staffordshire. Larvae are often found on birch, bracken and other ferns. Yet, at light, only single examples were taken. Other Staffordshire moths which follow this pattern include the Peach Blossom, *Thyatira batis* (Linnaeus), the Double Dart, *Graphiphora augur* (Fabricius), the Brick, *Agrochola circellaris* (Hufnagel) and the Gothic, *Naenia typica* (Linnaeus). In my garden and other locations, these moths are much more numerous at sugar than at light. The opposite does happen in a number of moth species. So far I have only found one specimen of Autumnal Rustic, *Eugnorisma glareosa* (Esper) at sugar, yet at light they are much more numerous.

These observations emphasise that light trapping alone is not sufficient to adequately record the moths of any site. A number of methods are needed to get a more clear and accurate picture of the status of these insects. I believe that most entomologists today over rely on light trapping, their fore-fathers were field workers with more methods of recording.

A possible historical specimen of the American Painted Lady *(Vanessa virginiensis)*

by Peter May (10514)

6 Aigburth Avenue, Aldwick, Bognor Regis, West Sussex.

I have often read with interest articles and passages in entomological publications concerning those butterflies which occur in the British Isles only as occasional vagrants/migrants, such as the Short-Tailed Blue and Bath White.

Most of the entomological publications dealing with our British Butterflies rarely give much in the way of information about the American Painted Lady, a situation contrasted by the Short-Tailed Blue *Everes argiades*. The latter species is often dealt with far more fully despite the fact that it has been reported here on fewer occasions. It has sometimes been suggested that the American Painted Lady may occur here more often than has been reported, due to its similarity to the far more frequent Painted Lady, *Vanessa cardui*. Indeed, a number of the reported specimens were believed to be the Painted Lady when initially captured, and their true identity noted later.

It was therefore with great interest that I read the two articles in the April 2002 issue of *Atropos* which dealt in great detail with the occasional sightings of the American Painted Lady in the British Isles. From this article, one can see that the known reported specimens "based on a collected or netted specimen" cover a period from 1828 to 1972 and total 15, with details of a further four specimens between 1930 and 1981 given, based on "Sight Records". All of these records have been from specimens very close to the coast, mostly between Cornwall and Kent inclusive.

One of the few books on British Butterflies which deals more fully with the American Painted Lady is *The Butterflies of Great Britain and Ireland*, published as part of the ongoing series on our Lepidoptera from Harley Books. The list of specimens given here differs slightly from that in the article mentioned above, although most of the records are identical.

During the summer of 2002, I was kindly given, by another Society member, a number of specimens of butterflies, in which I had anticipated to find an American specimen of *Vanessa virginiensis*. Upon arrival, I was greatly surprised to see that this specimen appeared quite old and to be saddle set. One antenna was missing and one of the hind wings was slightly deformed, although not sufficiently to affect flight. Further investigation revealed the presence of a data label, on which I

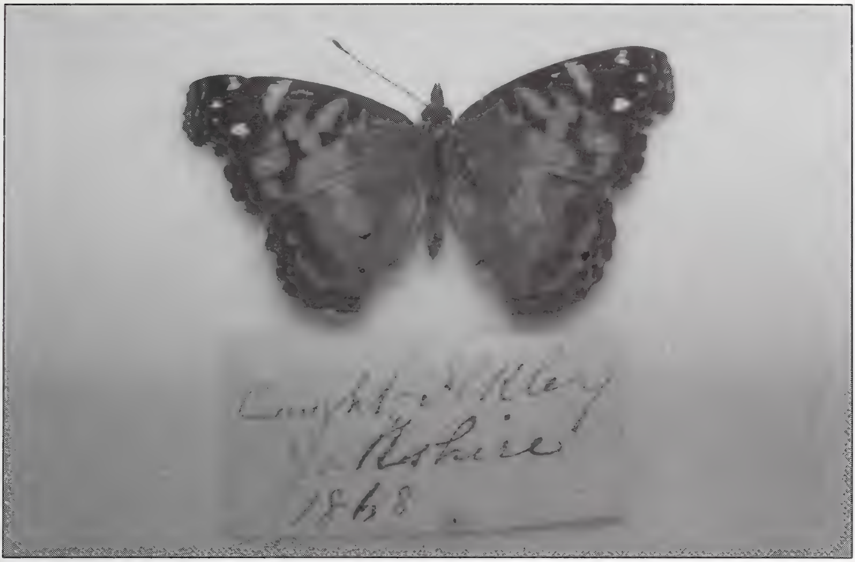

Figure 1. Upperside of the historical specimen of *Vanessa virginiensis.*

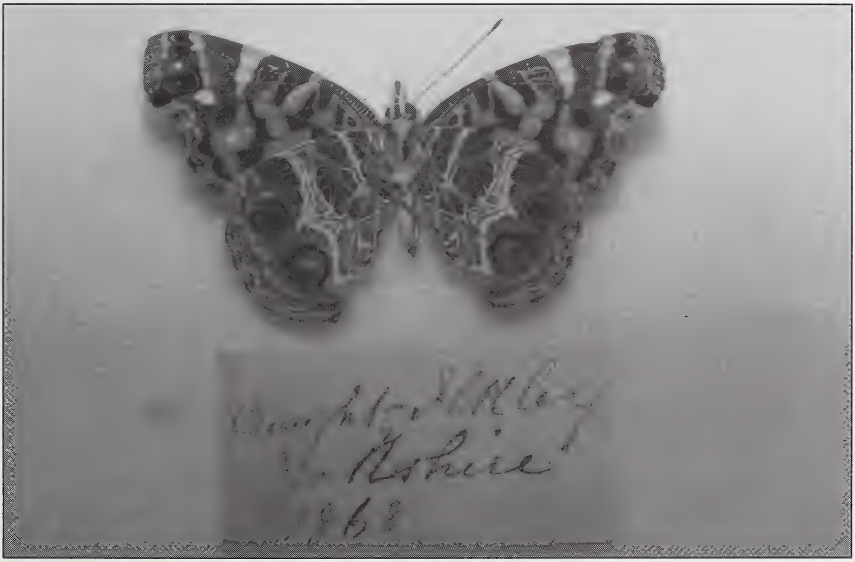

Figure 2. Underside of the historical specimen of *Vanessa virginiensis.*

was greatly surprised to see written “Caught Ilkley, Yorkshire 1868”. This specimen is not mentioned in either of the publications, and so it is quite possible that it represents a new record for this vagrant species, and possibly the 3rd such specimen caught here, and from a location far more northerly and inland than any others. I have so far been unable to ascertain any further details of the history of this specimen, which may have escaped a report in the entomological literature if it was initially misidentified as a specimen of *Vanessa cadui.*

I feel I must however end on a note of caution, in that one must always be aware of the possibility of the specimen being the subject of a fraud, which was a regular occurrence for some species during the 19th century, especially from a location outside those previously reported. However, I am not aware of any reported incidences of fraud for the American Painted Lady, and I feel that location alone should not be used to either prove or disprove the validity of such a record.

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Late Large White Butterfly larvae

by Jan Koryszko (6089)

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During early December 2002, a number of friends showed me larvae of the Large White butterfly *Pieris brassicae* Linnaeus, which were found in their gardens. They were of a new brood, munching away at their cabbages and fresh growths of sprouting broccoli. Following the mild, wet weather, these plants were full of new growth.

I have also heard of similar observations in other parts of England. W. Briant of Salisbury, Wiltshire, a gardener of over 60 years, published a short note of comparable finds in a gardening magazine. No doubt ‘global warming’ is the reason for this?

Chamomile Shark Moth, *Cucullia chamomillae*, in Scotland

Frank McCann (6291)

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During the summer 2003, I was looking at the chamomile plants growing near where I stay in Easterhouse. I went to nearby Queenslie. A number of years ago, the land here was disturbed by land moving machinery. Hedges were planted and some grass sown. In most areas of Queenslie, chamomile and other wild plants are now common.

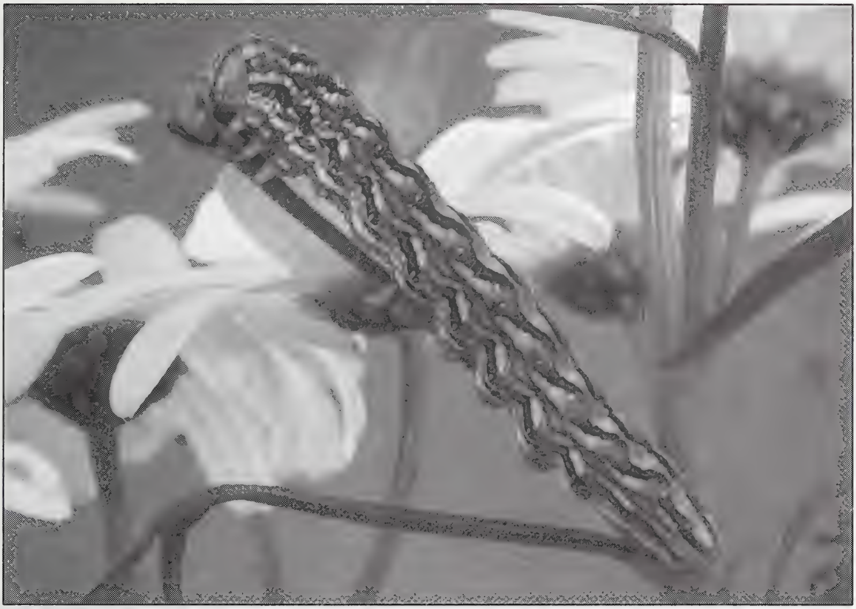

Figure 1. Chamomile Shark caterpillar, photograph copyright Ian Kimber. This and many other high quality British moth photographs are featured on Ian's website, www.ukmoths.force9.co.uk

I found Chamomile Shark Moth, *Cucullia chamomillae*, caterpillars on several occasions this summer at Queenslie. Two of these were full-grown. I kept two of those found. These pupated in flower pots containing garden compost.

South of Queenslie, in the Balanark area, I noticed some more chamomiles and a few Chamomile Shark caterpillars in 2002.

Migrating Monarchs

by Malcolm Simpson (4859)

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Whilst on holiday in New England and Canada between 17th and 26th September 2002, the commonest butterfly seen was the Monarch, *Danaus plexippus.*

All, without exception, were flying in a southerly direction, generally with the wind, sometimes against. It was noted that they usually flew at a height of about 10 metres although several were seen at an estimated height of 80 metres. Those at greater height would glide for 50 metres or more without any wing movements, making it easier to understand how they are able to cover such great distances to their winter roosting sites in the mountains of Mexico. These high flying individuals were only seen in Toronto, where their southerly migration route would take them directly over Lake Ontario, a distance of some 25 miles to the south side of the lake. This high flying, mainly gliding, may well be the method that is regularly used to cross large tracts of water encountered on the lines of migration.

Most of the Monarchs seen were in built-up areas. I was especially pleased to see up to twenty nectaring on *Buddleia* in the public gardens opposite the Sheraton Hotel in Niagara Falls, Canada. It was not difficult to pick them of the *Buddleia* flowers with the forefinger and thumb while they were feeding. It occurred to me that the noticeable concentration in built-up areas was due to their being able to easily find nectar sources in private and public gardens, in preparation for their long migration.

Following reports of the devastation of Monarchs, due to heavy and prolonged frosts at their mountain roost sites the previous winter, it was good to see so many over the wide area I travelled from Boston to Toronto.

* * *

Further Notes on Sugaring

by Jan Koryszko (6089)

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I was most interested in the request by Fiona Vass for any entomologists out there willing to divulge their secret sugaring recipes (Vass, 2002). I myself, like Fiona, have, at times, had poor results from my sugaring efforts. Weather conditions and natural lures (such as flowers in your area) may distract moths from the sugar patch at certain times of the year. I notice some wet nights can be quite good, possibly because the flower-heads are soaked? This may make the sugar patch a better place to feed on these nights. Fiona lives in the middle of a town, so traffic noise, pollution and street lighting could all be factors.

Every location has different species of moths, so you have to experiment with different sugaring methods. In my previous notes on this subject in the *Bulletin*, I was always finding new methods of sugaring. One method in some areas may bring moths from miles away. Yet, in another area the same method brings poor results. Moths love most sweet sticky things. Most sugaring ingredients attract them. Most entomologists have various brews and recipes, some said to be secret formulae added to the brew.

I feel that if you sugar the same tree, post or fence regularly, even during the winter months ("once a month in winter") even during bad weather, the solution soaks deep into the wood. This attracts moths for a long time. I once stopped sugaring a certain post after years of doing so regularly. This post still attracted moths over six months later. I sometimes drill small holes in a post so the solution soaks deep inside the wood and does not get washed away by the rain. The moths love to probe these holes. The moths seem to like the old stale beer solution, which lingers in the holes. Maybe this is the secret solution?

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Butterflies and Moths in 2002

by Malcolm Simpson (4859)

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Although 2002 was a generally disappointing year, particularly for butterflies, a few highlights made it a memorable one for me.

Firstly, on 23rd July, a small colony of White-letter Hairstreaks, *Satyrium w-album*, were seen flying at the top of some established elm suckers at the bottom of my garden.

Then, on 24th July, a Marbled White, *Melanargia galathea*, visited my garden for a few seconds. Although they are to be found on the railway embankments for about a mile from Abbots Ripton, this is the first time I have seen one in the village.

During a very heavy rainstorm on 9th August, I found a full-grown larva of the Elephant Hawk Moth, *Deilephila elpenor*, almost swimming across my patio. It subsequently pupated successfully. On 15th August, a friend, Pearl Longland, brought me a full-grown larva of the Hummingbird Hawk Moth, *Macroglossum stellatarum*. She had found it that day on a beech hedge in Bury, Cambridgeshire. This also pupated successfully.

However, the most exciting event started with an evening telephone call, again from a friend. Ken Rogers lives in Ramsey, Cambridgeshire. He is knowledgeable on British butterflies and assured me he had a Camberwell Beauty, *Nymphalis antiopa*, in his greenhouse. A quick dash in the car from Abbots Ripton to Ramsey confirmed Ken`s identification. It was a male in worn condition – this was on Tuesday 10th September 2002.

I suppose this proves that even in "poor" years one must never give up hope!

Tragedy in the laboratory — obscure and curious items of entomological literature, part 6

by Richard A. Jones

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Over several years, Brian Gardiner, a previous editor of this journal, published a series of articles on some lesser-known entomological books in his library. He did this in a spirit of clearing up some bibliographical inconsistencies, giving interesting background to several important and historical works. In a similar vein I offer some details of a few obscure and curious books that have found their way into my own library. However, in a departure from Brian Gardiner's theme, the books I offer are not useful key works by important entomologists, they are strange oddities, quaint and off-beat. But they are all peculiarly entertaining and I treasure them all.

A synopsis of the classification of insects by H. Maxwell Lefroy, London, Lamley & Co., 1913

This 32-page booklet in green paper wrappers is a list of all the families of British insects, with a brief 2- or 3-line description of key features for each. Thus, the Syrphidae, for instance, are described as "Hover flies. A spurious vein between R 4-5 and M 1-2 or the first posterior cell closed remote from the edge...." And so on.

But it was not the content of this rather obscure and tatty booklet by the Professor of Entomology at Imperial College that prompted me to buy it for £1 in a tiny bookshop in Westerham, it was the letters and newspaper cuttings that were tucked inside.

The letters, one typed (1923) and the other two written in ink in an exuberant flowing hand (1924/undated) are signed by Lefroy and addressed to a Miss W.H. Van D. Bruyn. They concern work connected with a study of "pond life" and make mention of proposed appointments to discuss "the books and my summary" and an unnamed group of "film people". It was Miss Van D. Bruyn's address that first caught my attention; she lived at Pootings, a small hamlet near Crockham Hill, Westerham. Well, I reasoned, if sweepings are the result of dustpan and broom, pootings must be the results of that peculiarly entomological tool the pooter! On second thoughts, I suspect there is some more prosaic derivation of this unusual place name, but my eye was caught.

The newspaper cuttings are more sobering. A small clipping from an unidentifiable source is at first apparently amusing. It was obviously written about the time of the annual motor show and cautions: “It was an experience [writes a friend of Professor Lefroy] to be driven by him in a car whose battered wings gave little confidence, as fast as the car could go, through London traffic, in company with a biscuit-box of noxious living insects, a few glass bottles of poisons, and a cylinder of some lethal gas.”

The others, dated October 12, 1925 and another some short time later, are apparently both from the *London Evening Standard*, and report on the collapse of Professor Lefroy, after becoming overcome by a gas of his own invention while working in his laboratory. Seeking some poisonous remedy against larvae of the house fly, Lefroy is reported to have been experimenting with a vapour he called “wood oil”. He was first taken ill in the early afternoon and returned “staggering” to his rooms at a nearby hotel in Stanhope Gardens. A friend helped him since “he could not stand up, and was very giddy, but his speech and senses were all right”. After resting for a while Lefroy is reported as saying that there was something that he wanted to lock up back at the College. He was accompanied back to his laboratory where he tidied things away and showed off his “fly farm” on the roof. The professor came down to see off his friends then returned upstairs as he had “some letters to write”.

At 8 o’clock, having become concerned at his absence, Mrs Lefroy visited the laboratory in search of her husband. She found him lying face down on the floor and the doctor that attended him described how Lefroy was unconscious, blue, and breathing very heavily. He was taken to nearby St George’s Hospital, but died the following Wednesday. At the coroner’s court the verdict of his death was given as ‘misadventure’. His loss was bemoaned as untimely and tragic, a martyr and a hero to science, “endeavouring to find some cure for certain insect plagues ... to benefit the human race”.

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Red Data List for Essex Orthoptera and Allied Insects

by Tim Gardiner (11826) & Peter Harvey*+

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Essex Red Data List

An Essex Red Data list has been produced for English Nature (Colchester Office) by P.R. Harvey on behalf of the Essex Field Club, with the input and help of the County Recorders of the Essex Field Club, as well as other naturalists in the county. The need for such a list is the result of discussions several years ago between English Nature, the Essex Field Club and the Essex Biodiversity Partnership. It is not intended that the list should be fixed for all time, but that changes can be made as necessary to keep it up to date and relevant to changes on the ground in Essex.

A Red Data List will help to provide the focus necessary to ensure that all of us, amateur and professional, are concentrating upon the species in the county which are of greatest significance. It is felt that an Essex Red Data list, if it were broken down into habitat groups, will help with monitoring to determine the success (or otherwise) of the actions carried out under the Essex Biodiversity Action Plans. It should also aid in the protection of sites with important nature conservation value by providing essential background information to English Nature, the Essex Wildlife Trust, consultants, planners and other people who have to make nature conservation judgements affecting the survival of our wildlife, as well as to local interest groups and naturalists at county, local authority and parish levels. The Red Data List can be viewed on the Essex Field Club website at http://www.essexfieldclub.org.uk/ERDlist/ERDB.htm.

It is the aim of this short paper to outline the Orthoptera species included in the list, because, of the 19 species of Orthoptera which have been recorded in Essex (Wake 2001), nine species (47% of species recorded in the county) are uncommon or rare enough to warrant inclusion in the Essex Red Data List. A further five species from the allied insects, Dictyoptera (Cockroaches) and Dermaptera (Earwigs) are included in the list. Species in the order Dictyoptera are very rare in the county and the Dermaptera are not particularly well studied in the county and therefore require further investigation.

Orthoptera (Grasshoppers and Crickets)

House Cricket *Acheta domesticus* L.

A. domesticus is not native to Britain, but is widely distributed nationally (Haes & Harding 1997). In Essex, this species is rare, but can be found on refuse tips, sometimes in large numbers. There are only fourteen 1km square records since 1980 for the county, which cover ten 10km squares. This species is probably declining, perhaps due to the demolition or refurbishment of old, warm and dirty Victorian style dwellings.

Long-winged Cone-head *Conocephalus discolor* Thunberg

This species was rare in Britain until the 1970s, with only a few colonies located in counties such as Dorset and Kent (Wake 1997). Since these times, *C. discolor* has experienced an expansion in range nationally and colonised most of Hertfordshire in the 1990s. The first Essex record was in the extreme west of the county at Fishers Green (TL3703) on 11th August 1995. Since then, colonies have been located mainly in the south-west of the county, in areas such as the Lee Valley Country Park and Epping Forest. However, this species has also been recorded at sites in central Essex (Writtle College Estate and Hanningfield Reservoir), to the north (Alphamstone) and southeast (Canvey) of the county and may therefore have already colonised much of Essex.

Further recording is necessary, however, as few records exist for this species in Essex and it must still be considered rare in the county. *C. discolor* is extremely difficult to locate because the stridulation is a very faint hissing noise. A bat detector set to the right frequencies is therefore helpful in detecting this species (Baldock 2000). Any area of tall grass is worth investigating, as the authors have found *C. discolor* adults and nymphs in grasslands which are infrequently mown.

Mole Cricket *Gryllotalpa gryllotalpa* L.

A very rare insect in Britain, which is included in the National Red Data Book and is the subject of an English Nature Species Recovery Programme. In Essex, there is only one recent record at South Woodham Ferrers in 2000 (Pinchen 2001). However, this record of an almost dead specimen from a garden may have been an accidental introduction. There are four other 10km records all prior to 1961, near Maldon, Colchester, Dovercourt and Southend. This species favours moist soils (Haes & Harding 1997) and therefore drainage of wetlands and destruction of flood meadows must be the main threats to any colonies that may still exist in the county.

Field Cricket *Gryllus campestris* L.

Another extremely rare species in Britain, it is doubtful whether *G. campestris* has ever been a native species in Essex. There are just three 1km records in the county, the most recent being at Shoeburyness in 1985, although this particular record may have been the result of accidental introduction on military equipment (Wake 1997). Preferred habitats in Britain include sandy grass heath and chalk downland (Edwards *et al.* 1996). These are rare habitats in the county, so the chances of locating native Essex colonies are unlikely. There is potentially suitable habitat at Broom Hill, West Tilbury, an unimproved Thames Terrace grassland with a south-facing scarp, and there is just a possibility that a 1960s record for the "Tilbury area" might originate from here. However both this and another nearby site have been searched without success as part of research undertaken on the species' current status in Britain.

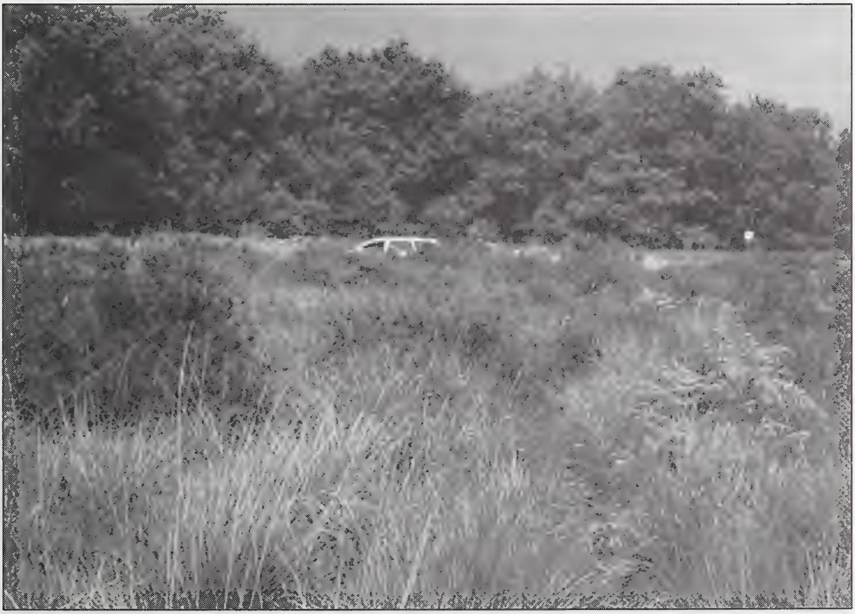

Figure 1. Sunshine Plain in Epping Forest, Mottled Grasshopper *Myrmeleotettix maculatus* was recorded here in 1985, but has not been seen at this site since. The authors believe that this is due to the loss of essential bare earth through neglect of this site, which has caused the plain to become overgrown with tall grass and scrub.

Photograph: Tim Gardiner

Mottled Grasshopper *Myrmeleotettix maculatus* Thunberg

A widely distributed insect in Britain, which even occurs in the far north of Scotland. However, in Essex, this is an extremely rare species with only eight 1km records since 1980. This rarity is almost certainly due to the lack of favourable habitats in the county. The habitat requirements are short, dry, sandy turf on nutrient poor soils, with the presence of bare earth essential (Wake 1997), but there are no records from old sand pits in the county where this kind of habitat is present. Sites at which this species has been recorded include Ministry of Defence land at Middlewick Ranges, south of Colchester and on sand dunes at Colne Point close to Brightlingsea.Threats to this species in Essex include the destruction of habitats through development of land for housing and the loss of essential bare earth through neglect of sites, causing them to become overgrown with tall grass and scrub (Figure 1). In addition, sea level rise is a serious threat to the colonies at Colne Point.

Woodland Grasshopper *Omocestus rufipes* Zetterstedt

There is only one record of this species in the county in the Blackmore area (TL60) in 1974 (Wake 1997). This species has not been re-observed at this site, despite obtaining a six-figure grid reference and extensive searches by Alan Wake and others. This old record must therefore be considered extremely doubtful, as *O. rufipes* has a very similar stridulation to Common Green Grasshopper *Omocestus viridulus* L. and it is highly likely that there could have been some confusion with distinguishing between the two species. The latter species is also found in the Blackmore area, which adds to the uncertainty of this record. More searches for this species should occur in the future, at the aforementioned site, and also in other suitable habitats such as woodland rides and edges because Marshall & Haes (1988) state that the few British colonies north of the Thames warrant special protection.

Common Green Grasshopper *Omocestus viridulus* L.

This species is very widespread in Britain, occurring in a wide range of damp grasslands, which tend to be unimproved in nature. In Essex, however, *O. viridulus* is scarce, and there have only been thirty-six 1km records spread over seventeen 10km squares since 1980. This species is predominantly found in the western half of the county and is most common in Epping Forest where damp, coarse, tall grasslands or restored heathlands are the main habitats. The most easterly record in the county is from Danbury Common.

The main threats to this species in Essex are development of sites and scrub invasion. Several colonies exist in close proximity to Stansted Airport at Molehill Green. The possible future expansion of this airport must therefore seriously threaten these colonies. Other sites where *O. viridulus* has been recorded have already been destroyed, in one instance by the Basildon Rugby Club development. Scrub invasion is also a major threat to colonies, and where possible some clearance of this growth should occur.

Grey Bush-cricket *Platycleis albopunctata* Goeze

P. albopunctata occurs mainly on the south coasts of England and Wales, where it inhabits coarse grassland on sand dunes, shingle beaches and cliffs (Haes & Harding 1997). In Essex, there are three old 10km records at East Mersea (pre-1896) and St. Osyth (pre-1940). These areas have been searched without success by Alan Wake in recent years, and it seems that this species is now extinct in the county. However, a limited amount of suitable sand dune habitat remains in the Colne Point area, so a re-introduction of *P. albopunctata* into its former range is a possibility for the future.

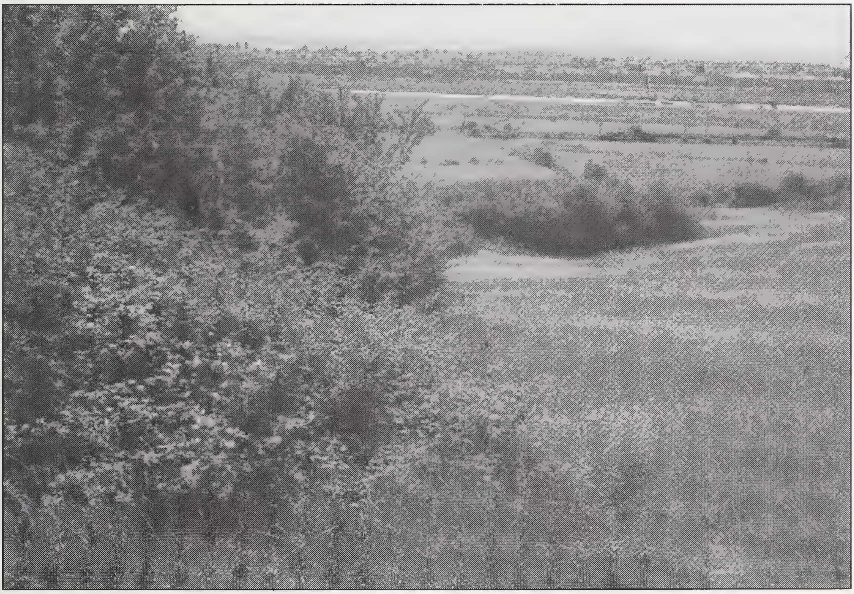

Figure 2. Typical downland habitat of the Great Green Bush-cricket *Tettigonia viridissima* at Hadleigh Castle Country Park. Singing males were heard in the thick scrub on the left.

Great Green Bush-cricket *Tettigonia viridissima* L.

This is a well distributed insect nationally, occurring from Norfolk to the south coast. In Essex, however, *T. viridissima* is much scarcer, and there are only fifty-six 1km records covering seventeen 10km squares. The majority of these records come from the Colne, Blackwater and Hadleigh Castle areas (Figure 2). Only a few colonies have been located in inland areas such as Little Baddow Heath. This species seems to prefer tall, scrubby, coastal vegetation, and may be threatened by the tidying up of sites at which it occurs. The other main threat comes from the destruction of its coastal habitats by the development of marinas, houses and other projects such as oil refineries. These threats are especially prevalent for the Thames corridor populations.

Dictyoptera (Cockroaches)

Dusky Cockroach *Ectobius lapponicus* L.

This species is native in central southern England (Haes & Harding 1997) and occurs in a wide range of habitats including scrub, woodland margins, commons and roadside verges. *E. lapponicus* is only occasionally encountered north of the Thames and there is only one pre-1961 record for Essex (Marshall & Haes 1988).

Lesser Cockroach *Ectobius panzeri* Stephens

There are modern records for *E. panzeri* from only one site in the county, collected by Peter Harvey in pitfall traps located at Colne Point during 1991. This species occurs mainly on the coast, in habitats including sand dunes, sea cliffs and shingle, and consequently, although suitable habitat on the Essex coast is extremely limited, there may be more colonies awaiting discovery.

Tawny Cockroach *Ectobius pallidus* Olivier

The only Essex record is from Southend Sewage Works (TQ88). This colony was discovered by Adrian Knowles in 1995. The nymphs were discovered beneath partly buried paving stones at the top of a shaded bank (Payne 1996). This colony may have been in existence for many years, or may have been introduced with dumped soil or rubbish (Payne 1996). However, this species was not found in a thorough investigation of the Sewage Works in 2002. Future surveys of the site are planned to ascertain whether this species has been lost from the area.

Dermaptera (Earwigs)

Short-winged or Hop-garden Earwig *Apterygida media* Hagenbach

There are only two Essex records for this species: Great Easton (TL62) (P.R. Harvey, 1999) and Felsted (TL72) (Widgery 2000). *A. media* is known primarily from Suffolk and Kent and these records fill in the 'Essex gap' which is probably the result of under-recording (Wake 2000). Habitats include hedgerows, the edges of woods and domestic gardens, where it can be found on a wide range of trees and shrubs (Haes & Harding 1997).

Lesne's Earwig *Forficula lesnei* Finot

There are only two Essex records for *F. lesnei* at Stebbing (TL62) and Thorpe-le-Soken (TM12) (Bowdrey 2003). This species is mainly beaten from trees and shrubs, hedgerows and rough vegetation, and is certainly under-recorded. This species may be found inside the hollow stems of Hogweed *Heracleum sphondylium* (Haes & Harding 1997).

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In Pursuit of the Field Cricket *Gryllus campestris* L.

by Dr Peter G. Sutton (7388)

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The preceding article by Tim Gardiner and Peter Harvey is a refreshing example of how Red Data Lists should be managed as transient snapshots of current species' status. These lists should, as the authors recommend, be kept up to date and relevant with necessary changes being made as and when the status of a species changes. For instance, the Long-winged Conehead *Conocephalus discolor*, although rare in Essex at the present time, is likely to become as ubiquitous a species in that county as it has become across southern England over the past 15 years. (There is no sign that the expansion phase for this species is waning, and the northern front of its range has now reached Leicestershire.)

The article also raises some interesting questions. Why are species such as the Mottled Grasshopper *Myrmeleotettix maculata* and the Common Green Grasshopper *Omocestus viridulus*, which are found regularly, even in untypical habitats across the country, Red Data Book species in Essex? There appears to be plenty of suitable habitat for both species in Essex... what factors are at play to preclude them from these? Why does the Lesser Marsh Grasshopper *Chorthippus albomarginatus* effectively replace the Common Green Grasshopper in certain areas of Essex and East Anglia? Will the current range expansion of the Lesser Marsh Grasshopper have a negative impact on populations of the Common Green Grasshopper elsewhere in the country? If so, what implications would this have for the postulation that the Lesser Mottled Grasshopper *Stenobothrus stigmaticus* was effectively "out-competed" by the Meadow Grasshopper *Chorthippus parallelus*, thus confining its known distribution to the Isle of Man in the British Isles?

Figures 1 and 2: The Essex Field Cricket, Shoeburyness, 1985.

The authors also mention the Field Cricket *Gryllus campestris*, and question whether it was ever a native species in Essex. It is likely that we may never know the answer to that question, but the article did bring back some vivid memories of the hot summer's day on the coast at Shoeburyness when, as a teenager, I discovered a specimen of this extremely rare insect in Essex. The details of this discovery were published some years ago in an article that appeared in the AES *Bug Club Magazine* and unfolded as follows:

> After visiting, I would wander across the short rabbit-cropped turf behind the beach to the old tidal pond near the barracks, and look for eels and Roesel's Bush-crickets. I never tired of catching the bush-crickets, which were present in abundance. They were very elegant, and definitely one of the most finely marked British insects. On one such day, I heard a chirp unlike any that I had heard before. By that time I was familiar with the loud songs of the Wart-biter and Great Green Bush-cricket, and so the Field Cricket immediately sprang to mind. This song carried above the din of the Roesel's Bush-crickets, and I searched for it in the usual manner. Eventually, I saw this magnificent creature, much larger than I thought it would be, running into a sandy crevice. From that moment, I knew it was mine. I carefully extracted it from its hole, together with the remnants of another cricket, and held it in my hands. I couldn't believe it. At last! I was in complete awe. This creature was larger than life as it scuttled up my arm, capturing the sun in its black chrome armour. I took some photographs and let it run back into its burrow. The record of the 'Essex Field cricket' as it came to be known, was confirmed by Chris Haes (the National Recorder), and later by Judith Marshall at the Natural History Museum using fragments that had been extracted from the burrow entrance. After fruitless searching for a population by various entomologists, it was decided that this record represented an introduction, possibly hitching a lift on army equipment brought back from abroad to the barracks over the road from the site of its discovery.

I once had a discussion with a good friend and entomologist, who recalled a similar experience, when after many years in pursuit of the elusive, he finally succumbed to a moment of sheer elation. Upon finding an RDB1 moth that had eluded him for many years, he let forth such a series of loud yells as to attract the attentions of a policeman, who was subsequently implored by concerned members of the general public to engage him in a "quiet word". I consider it a privilege to have shared the company of some outstanding entomologists, and to have observed, on the rare occasions that such behaviour has been warranted, the characteristic momentary loss of control that accompanies a discovery of outstanding entomological importance. Certainly on one occasion I contemplated scribbling a makeshift scorecard in response to a remarkable impromptu "jig" performed by a colleague in a valley bog on Dartmoor, which was regarded to be a splendid display by all accounts.

The Essex Field Cricket article goes on to describe the quest to find a genuine old English Field Cricket:

> We arrived at the site, a small field surrounded by some magnificent trees, including several towering emerald limes. There was something about seeing the sun coming through the trees on that tranquil Saturday morning that put me in mind of a verse from that wonderful poem, *April Rise*, by Laurie Lee:
>
> "Blown bubble film of blue, the sky wraps round,
> Weeds of warm light whose every root and rod,
> Splutters with soapy green, and all the world,
> Sweats with the bead of summer in its bud."
>
> The anticipation was immense. We moved closer, and suddenly, there it was… that music. For that moment, time had ceased to exist as I was gripped by the beautiful sound coming from the tree-lined lawn. Not like the haunting, alluring song of the Sirens that tempted Odysseus, but a summer melody, in May, in England.
>
> We moved closer still, through the shimmering pools of sunlight under the trees and closer to our quarry. We crept quietly along the lawn, each singling out a musician to study. All too often, my attempts to locate an individual ended in an audible 'Click!' as the cricket snapped its wings shut and disappeared from view. At last, I spied a familiar 'porch', which marked the entrance to a burrow. I laid down next to the burrow, with my chin resting on my hands just above the mini-amphitheatre. Eventually, thinking that the coast was clear, a pair of varnished wings appeared as the cricket reversed slowly out of its burrow. I watched, hypnotised as it began to sing in front of me, taking me back through time to Selbourne. I imagined Gilbert White marvelling at the exact same spectacle, and wondered if he was smiling, as I was. I recalled his words: "Thus the shrilling of the Field cricket, though sharp and stridulous, yet marvellously delights some hearers, filling their minds with a train of summer ideas of everything that is rural, verdurous and joyous."

….and indeed, for some of us, the song of that most colourful and impressive group of insects, the Orthoptera, still remains the very essence of summer itself.

* * *

Insects in Florida, May and June 2001

by Stuart Cole (10159)

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In May and June 2001, I spent three weeks at the southern tip of the Florida peninsula exploring the Everglades and the Keys. Although the area did not seem to be particularly rich in insects, a note of what I found may be of interest.

The low latitude of this part of Florida gives it a virtually tropical climate. The most southerly point (Key West) is only 80 miles north of the Tropic of Cancer. Proximity to the islands of the Caribbean has resulted in vegetation quite different to anywhere else in mainland USA. Most of the southern area of the peninsula used to be swamp. Much of this has been drained for agriculture but a large swathe in the south-west was saved and lies within the Everglades National Park and the adjacent Big Cypress Swamp National Reserve. However, the Everglades is America's most damaged national park, from pollution, water diversion and naturalised alien plants and animals. Some bodies of water have warning notices about the high levels of mercury in fish caught there. Bird species, such as the egrets and herons, now seen in dozens at most, were once present in tens of thousands. At the time of my visit the Everglades had also endured a three-year drought and the swamps were dry except for some of the deeper pools and ditches.

As well as freshwater swamp and mangrove forest, there is, on higher ground (i.e. two to four feet above sea level) dry pine forest and patches of humid tropical woodland (known as hardwood hammocks). The Slash Pine (*Pinus elliotti*) forest that grows on a low flat ridge of fossil coral, is the first habitat encountered on entering the reserve on the only road that passes through the Everglades. Two kinds of small palm, Saw Palmetto and Cabbage Palm, form a scrub beneath the light shade of the pines. Some palms were in bloom and the masses of little white flowers attracted beetles in some numbers. The most distinctive of these was the trichiine chafer *Trigonopeltastes delta*. This yellow and red-brown insect has long back legs and a yellow D-shaped mark on the pronotum. The little round, dark blue tortoise-beetle *Hemisphaerota cyanea* was common on the leaves of the palms. The broad flat tarsi of this insect are densely furnished with hairs which, combined with the secretion of oil from the feet, enables it to cling almost limpet-like to the leaves. *Hemisphaerota* is a small tropical American genus of Cassidinae; five of the nine species are confined to the island of Cuba which lies 90 miles from Florida. One of the few other beetles found here was *Uloma punctulata* under pine bark. This small red-brown tenebrionid closely resembles *U. rufa* of Europe.

Beyond the pine forest the country opens out into the great flat freshwater marshland dominated by Sawgrass (*Cladium jamaicensis*, which is actually a sedge). The marshes were virtually dry but at the deeper depressions such as the lake at Taylor's Slough there was water still deep enough to give refuge to a dense population of fish, amphibians and aquatic reptiles. At this time turtles and alligators were wandering over the parched country desperately seeking water and they had probably homed in on the lake from miles around.

Dragonflies and grasshoppers were abundant around the lake and anywhere else in the marshes where freshwater could still be found. The grasshoppers were all of one species: the big, plump Lubber Grasshopper (*Romalea microptera*). These were present in great numbers on waterside plants, sometimes dozens gathered together on one plant. The immatures and adults are so different that I thought there were two species. The young lubbers are black with sharp yellow lines while the two and a half inch long winged, but flightless, adults are various subtle shades of green and orange. Large, colourful and slow moving, they make no attempt to conceal themselves so I think the lubbers must be unpalatable.

In the evening, after dark, there was a good deal more activity around lake the and in the nearby hardwood hammock as nocturnal animals emerged; racoons, opossums and nine-banded armadillos scavenging for turtle eggs, insects etc. while nightjars swoop overhead and fireflies drift in the air.

For four days in May, the bibionid fly *Plecia nearctica* appeared in huge numbers on vegetation across the Everglades and south Florida, much like *Bibio marci* swarms in Britain in spring. *P. nearctica*, which is black with a red pronotum, is apparently an immigrant to Florida that has arrived through natural range expansion since the 1940s.

About ten miles from the sea at Florida Bay, salt water starts to encroach on the freshwater swamps and the vegetation changes to mangrove woodland, mainly of Red Mangrove (*Rhizophora mangle*). These woodlands are inhabited by prodigious numbers of mosquitoes as well as an abundance of horseflies and a walk through them is quite an ordeal. There are 43 species of mosquito in the Everglades, the most numerous of which is the Black Salt Marsh Mosquito (*Aedes taeniorhynchus*). One mile-and-a-half long track through the woodlands leads to Snake Bight on the bay, a prime bird-watching spot. This path is notorious for its biting flies. Upon entering the still, humid heat of the mangroves I was immediately assailed by swarms of mosquitoes, that along with a myriad of tabanids, pursued me until I emerged at the mud flats of the bay. Here I was rewarded with the sight of a dazzling white gathering of Snowy and Great Egrets accompanied by a few herons, spoonbills and ibises.

Two fine species of insect frequented the Snake Bight track. One was the carabid beetle *Pasimachus marginatus* (Scaritini), just over an inch long with a large head, matt black with purple edges to the pronotum. The other was *Mydas clavatus*, a large fly of the Mydidae which has dusky wings and the inch long black body is crossed by a band of orange on the abdomen. These flies flew back and forth along the track occasionally settling on the ground. Other arthropods roaming the track were isopod crustaceans of the genus *Ligia* similar to the sea slater of British seashores.

Whilst I was visiting the Everglades I stayed at a motel in Florida City about ten miles from the park border. Many insects, mostly small beetles, came to the lights of the motels and gas stations along the strip, especially after the rains that, at long last, brought some respite to the countryside. One notable species was a luminous click beetle (Elateridae) that I have so far been unable to identify but which, I think, must be one of the genus *Pyrophorus*. It was two cm long, uniform dull brown except for a small pale spot at each hind corner of the pronotum. At night these spots emit a very bright greenish light that glows continuously instead of flashing on and off as in the fireflies of the Lampyridae. The elaterid can, however extinguish the light at will when disturbed.

Another interesting beetle that occasionally turned up was a little shiny black scarabaeid, resembling an *Aphodius* but which I identified as *Hybosorus illigeri* of the subfamily Hybosorinae (or given family status by some). I had some doubts about this identification since the natural distribution of this species is Africa, but I have recently discovered that *H. illigeri* was introduced into the USA at least 150 years ago and is now also naturalised in southern Asia. Other beetles at light included *Scarites subterraneus* and the dytiscid *Hydaticus bimarginatus*.

One of the more numerous insects among other groups at light was the giant water bug *Lethocerus griseus* (Belostomatidae). This reached a length of just over two inches, dark brown in colour with a greenish tinge. These bugs, along with other related species, are also called toe-biters in North America and are the biggest Heteroptera that I have seen but some tropical *Lethocerus* species are far larger, reaching a length of four inches.

After the first week I moved down to Key Largo, the northernmost of the string of small islands that form the Florida Keys. The islands nearest to the mainland are fragments of a fossil coral reef and were once wooded with mixed hardwood trees of West Indian origin and fringed with mangroves. Most of the natural vegetation has been destroyed to make way for motels, houses and marinas but some blocks of woodland survived or have regenerated and are now protected. The 40 to 50 tree species that form these woodlands include West Indies Mahogany, Golden Fig, Gumbo Limbo and the naturalised Tamarind.

Not much animal life was seen in these woodlands; no mammals, very few birds and the only reptile was the abundant Brown Anole, a little lizard that has been introduced to Florida from the West Indies. A well known native of the woods is the Florida Tree Snail (*Lignus fasciatus*) whose colourful and variable shells, reaching one-and-a-half inches in length, were a common sight on tree trunks. Outside reserves this tree snail is endangered through commercial collecting.

The most numerous insect was an unidentified species of orange and grey bug of the Lygaeidae that wandered over tracks and the deep leaf litter. The introduced Honey Bee (*Apis mellifera*) was also abundant and I came upon several of their nests made in the hollows of tree trunks. At one spot along a track several males of the red and black velvet ant *Dasymutilla occidentalis* were flying about low over the ground. The females of this species are called Cow Killers from the supposed effects of their powerful sting.

For just one day, the beetle *Euphoria limbalis* (Cetoniinae) suddenly appeared in great numbers everywhere on the foliage of shrubs and trees in the woodlands. They came in several colour forms ranging from brown through green to blue, with green the most common and blue scarcest. The genus *Euphoria* is distributed from northern South America to the USA where several other species occur including *E. sepulcralis* that I also found in the woodlands of the Keys. This one is black with white spots. Another abundant beetle on vegetation was *Chauliognathus scuttelaris* (Cantharidae). I don't know whether this species has the habit of swarming, but some species of this widespread genus do. *C. lugubris* of Australia, for instance, can occur in incredible numbers in some years. I have seen bushes in the Sydney region weighed down with many thousands of these beetles massed in heaps on the foliage.

Among the few other beetles identified were the oedemerid *Oxycopus thoracicus* and the ladybirds *Hippodamia convergens* and *Curinus caeruleus.* The latter is dark blue with unspotted elytra and its natural range appears to be Mexico south to Brazil. It may be present in Florida through introduction and has been deliberately introduced to Hawaii to control a pest species of mealybug (Pseudococcidae).

There were few butterflies but some attractive species frequented the woodland verge. One of the most common was the Zebra (*Heliconius charitonius*) which has black and yellow banded wings and which, in the USA is resident only in south Florida. Another of the Neotropical family Heliconiidae here was the Gulf Fritillary (*Agraulis vanillae*); the wings are dark orange on the upperside and have iridescent silver spots on the underside. Amongst other species were the large Eastern Tiger Swallowtail (*Papilio glaucus*), which has a wingspan of four-and-a-half inches, the Red-banded Hairstreak (*Calycopis cecrops*) and one or more species of the bright yellow Sulphurs (*Phoebis* spp.) of the Pieridae.

Some other butterflies species were seen only in the Swamp Cypress forests at Corkscrew Swamp to the north of the Everglades. A particularly handsome one here was the Ruddy Dagger-wing (*Marpesia petreus*), a nymphalid that frequented clearings where it fed at flowers of Bottonbush (*Cephalanthus*). It has dark orange wings crossed with black lines and a pair of tails on each hind wing. Although this species strays north as far as Kansas, it is confined, as a resident, to southern Florida and Texas. Another identified was *Danaus gilippus*, a relative of the Monarch Butterfly, which has chestnut-brown wings.

* * *

Book Reviews

Atlas fotográfico de los lepidópteros macroheteróceros íbero-baleares

Volume 2 (Lasiocampoidea, Bombycoidea, Axioidea y Noctuoidea (1)) by Josep Joaquim Pérez De-Gregorio, Josep Muñoz & Martí Rondós, 2001, published by Argania editio, S.C.P., Barcelona, ISBN 84-931847-1-3.

Atlas fotográfico de los escarabeidos florícolas íbero-baleares

by Estefanía Micó & Eduardo Galante, 2002, published by Argania editio, S.C.P., Barcelona, ISBN 84-931847-3-X.

Atlas fotográfico de los cerambícidos íbero-baleares

by Eduard Vives, 2001, published by Argania editio, S.C.P., Barcelona, ISBN 84-931847-0-5.

They are obtainable from Lydie Rigout at Hillside Books or from Pemberley Books (Colin Johnson).

These are three very well produced books, although the text is in Spanish. They follow a common pattern that is visually pleasing and factually well presented. Each has a list of contents that is followed by a 2 page Introduction. The first section has a general introduction to the relevant group, which is followed by generalised details of structure, with labelled drawings or photographs. This introduction also contains sections on group biology and on distribution. There are other included details, such as mimicry and defence, ecology, conservation proposals and acknowledgements, but these are not in each book.

There follows the taxonomic check list, with considerable synonymy included. Then the taxonomic index to the species in the book. There is a list of numbered references and finally keys to the symbols used throughout the text. The use of symbols is designed to reduce repetitive descriptions and make it quicker to look such information up. Such symbols (or icons) are used for habitat and/or vegetation type, emergence times and distribution. In the Lepidoptera volume there are also icons for time of day the adult is active, forms and varieties, altitude found at and broods where the adults are different.

There follows the species information, which constitutes the main part of the book. Each species is dealt with on a single page. The species details follow a standard format, though there are differences between the three books. Each species is illustrated by large colour photographs of set specimens of male and female, and varieties and broods where applicable. There are icons for habitat, activity times, altitude etc as appropriate for the group and as explained in the introduction. A coloured date line shows when the adult may be found. Distribution in the Iberian peninsular and the Balearic Islands is shown on small maps that are about 4 cm across the northern Iberian coast. These maps show the Iberian regions for both

Spain and Portugal in the volume on Cerambycidae, but not in the other two books. The text (in Spanish) is divided into sections on size, descriptions of salient features, biology and distribution. The bibliographic references for the species are listed by number to the relevant paper in the list of references in the first part of the book. Additional full references are then given. Details of taxonomy – family, sub family, tribe and sub tribe, as appropriate, are detailed at the bottom of the page.

These books are exceptionally well produced. The colour printing is very good, the format is useful and relevant as well as being visually pleasing. They are produced in hardback and printed on a high gloss paper. I recommend them to anyone specifically interested in the Iberian species of the group. They are also relevant to the species that occur in Britain, where applicable.

Nick Holford

British, European and Asian Butterfly Vernacular Names, including Forms, Subspecies and Aberrations

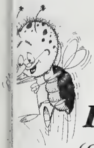
By William A. McCall. 78 pages. 2003. Published by the author.

This purports to be the third edition of this book, although the title has been altered to include "Asian". However, I can see no justification for altering the title with this edition, since only one additional species of butterfly is included, being *Leptidea reali*. Indeed, one could be misled into thinking that this new edition included many new mainly Asian species not listed in previous editions. Having seen the inclusion of this species in the contents list, I was disappointed when I turned to the given page. The details were very brief and the photograph used as an illustration is almost certainly a copy of that used for *Leptidea sinapis*. Whilst I accept that these two species are inseparable by wing features alone, a photograph of a specimen of the right species should have been included.

I have compared the text of this version with that of the second edition, which was reviewed in the *Bulletin* in April 1998. There appear to be no additional entries under each of the species dealt with. The only alterations I could find, apart from the one additional species referred to above, were a longer classification and a one page appendix of four species of "Vagrant species not listed". These four are *Erebia ligea*, *Driopa (Paranssius) mnemosyne*, *Gonepteryx cleopatra* and *Cacyreus marshalli*. For these four species, the only listings relate to the foreign vernacular names.

To anyone interested in the names of our British butterflies the new edition of this book may prove useful. However, I can see no reason to purchase it if one already owns a copy of the second edition due to lack of any new information contained therein. (I have not seen the first edition, so cannot comment upon it.)

Peter May (10514)



World Catalogue of Insects, Volume 1, Hydraenidae

(Coleoptera) by Michael Hansen, published by Apollo Books, Stenstrup, 1998. 123 pages, plus two pages of Appendix, 25 pages of References and an Index of 18 pages.

The Publisher's Preface on page 5 discusses the needs for, and uses of, a World Catalogue of insect species, suggesting that it would reduce the need for taxonomists to consult all of the literature relevant to a particular group or species during their work. The main expressed aim of the series will be to create authoritative world scale catalogues of insect species. The other aim expressed is that the appearance of the current volume will encourage other taxonomists to prepare and publish catalogue manuscripts in the series. The language is adequate, but is not perfect English.

The author's Introduction on pages 7-10 describes the major sources and gives a cursory mention of the other papers used for the work. It goes on to state that the International Code of Zoological Nomenclature has been adhered to throughout, and that the names have been checked for various details within the rules of the International Code. How other general problems are dealt with, such as infraspecific names, is also described. There follows a description of the various types of names that are included in the Catalogue, then a brief reference to the major biogeographical regions used. This is followed by a final section detailing the Nomenclatural Acts put forward in the work, including the suggesting of replacement names for two cases of homonyms where other suitable synonyms were not available.

There is a brief discussion of the classification of the Hydraenidae on pages 11-12. This ends with a summary of the classification scheme used for the catalogue section.

The bulk of the work is exactly what the title states it to be, namely a catalogue of all the known species of the family, with the references and synonymy listed alongside each. This would probably make it of considerable value to anyone working on the taxonomy of the group. However, I feel that the work is too specialised for the majority of coleopterists.

Nick Holford

Pocket Guide to the Butterflies of Great Britain and Ireland

by Richard Lewington, 2003, published by British Wildlife Publishing, Hook. ISBN 0 9531399 1 3, paperback - £9.95.

This small book, measuring about 7ins by 4ins and about 4/10ths of an inch thick (18cm by 10cm and about 1cm thick) does slide easily into the pocket. There is a short introductory section to present day butterfly watching, followed by brief details on conservation, though unfortunately this more or less ends up as an advertisement for Butterfly Conservation. This is a shame as they are not the only players in the field. Furthermore, this type of attitude does much to undermine the hard work of others for the conservation of our butterflies. There are brief details on butterfly structure, based upon the Swallowtail, on the life cycle, based upon the Peacock butterfly and an introduction to the various butterfly families. The final part of the introduction is a section on how to use the book. The species are arranged by families, and all illustrations are life sized.

The species descriptions follow a standard pattern. The text is minimal but contains well written, useful information about distribution, habitat and flight time. There are also clear pointers to making accurate identifications. Arranged with these is a series of illustrations and these, not surprisingly, are the strength of the book. They follow a more or less consistent pattern, as follows:-

1. Adults in typical posture, often on the food plant and with an explanatory note, such as feeding or basking.
2. Details of the upperside, with illustrations of both sexes as appropriate.
3. Details of underside, again with both sexes being illustrated as appropriate.
4. Pictures 2 and 3 above may be of different broods, if this is important. Pictures 2-4 have an accompanying note to assist identification, again as appropriate.
5. Illustrations of the egg, with a note.
6. Illustrations of the caterpillar, with a note.
7. Illustrations of the pupa, with a note.
8. Distribution map
9. Bar charts showing the time of year when the different stages are about.

There follows a section on extinct species and rare migrants. The details of extinct species are perhaps less relevant in a pocket guide, which is designed for use in the field. However, they are probably nice to have, and they might be of use on a field trip to a museum. Finally there is a section of day-flying moths. The book is rounded off with a list of other books on butterflies.

Do we need yet another book on British butterflies? Possibly not, but this one has much to recommend it – particularly the clear and useful layout and the excellent illustrations. On top of this its size means that it is a true pocket guide. Personally, if I had to choose one to take out into the field, then this would be it, and at £9.95 it wont break the bank! It is particularly suitable for the casual observer or the non-specialist entomologist, as well as to the novice starting an interest in the group. On top of this I would think that experienced lepidopterists would benefit from having it around.

Nick Holford

The Geometrid Moths of Europe vol. 4: Larentiinae II (Perizomini and Eupitheciini)

by Vladimir Mironov. Published by Apollo Books of Stenstrup, Denmark, 2003. 464pp, 16 colour plates, 45 black and white plates of genitalia diagrams, black and white photographs within text. ISBN 87- 88757-40-4.

The pug moths are one of the most difficult groups for the amateur macrolepidopterist to identify: for years the only commonly available reference sources have been general identification guides like Richard South: *Moths of the British Isles* (1961) and Bernard Skinner: *Colour Identification Guide to the Moths of the British Isles* (1998), augmented perhaps by the British Entomological and Natural History Society's *Identification Guide to the British Pugs* (1981), with its four plates of photographs of set specimens (inadequate to show the range of variation) and eleven pages of line drawings of dissected genitalia.

And now, in 2003, Mironov's book appears almost simultaneously with the long-awaited *British and Irish Pug Moths* by Adrian Riley and the late Gaston Prior. These books do not duplicate each other; they are complementary. Riley and Prior have produced an excellent identification guide and biological account of the 53 British species: Mironov has produced a taxonomic guide to the Perizoninii and Eupitheciinae across all of Europe, which is likely to become the standard work on this subject for many years to come.

The European book is far more sumptuous. It includes the Perizominii (Rivulets, etc.) whereas Riley and Prior concentrate entirely on the Eupitheciinae (Pugs). The sixteen pages of colour plates illustrate many examples of each of 151 species (133 pugs), drawn from all over Europe, giving an excellent indication of the range of variation. The plates are 1.5 × natural size, while those of Riley and Prior are life size – I find the greater ease in seeing detail in the former far outweighs the authenticity of the latter. Within the text, points for identification are illustrated by Riley and Prior by line drawings. Mironov uses enlarged black and white photographs.

Both books provide distribution maps, but those of Mironov are Europe-wide: locations within Great Britain are therefore less detailed, but for those whose focus is beyond our own small islands the greater geographical range is more informative.

I tested the usefulness of the two books by examining the treatment of two similar, often-confused species: *Eupithecia pulchellata* (Foxglove Pug) and *Eupithecia linariata* (Toadflax Pug). The waters were muddied immediately by the presence in Mironov of a third similar species – *Eupithecia pyreneata*, which occurs in Southern Europe, and a continental subspecies of the Foxglove Pug (*E. pulchellata intermedia*). A fourth species, *Eupithecia laquaearia*, was also depicted, but although closely related, significant differences make confusion unlikely.

The distinguishing character between the two species is, according to Riley and Prior, the fullness of the basal patch – much more substantial in *pulchellata*. Mironov's photographs also show this difference but he draws attention instead to a more sinuate antemedial line and wavy postmedial line in *pulchellata*. Both books would have led the enquirer to the correct identification, but Mironov gives more pointers to look for. This greater specificity is because he is helping his readers to distinguish between four species, not two.

The habitat and life cycle descriptions of all the species are both very full; again, Mironov has more European detail than Riley and Prior. He also provides interesting information on the parasites which live on each species. The index seems rather sparse, with entries restricted to the scientific names of each species, directing the reader to the appropriate places in the text. The bibliography, on the other hand, is fulsome, thirty six pages packed full of references.

The book costs DKK 720,00 (about £67.50) plus postage- not cheap, but the price reflects the quality of production. It is available from Apollo Books (Kirkeby Send 19 DK-5771, Senstrup, Denmark . Tel +45 62 26 37 37) or may be ordered via specialist bookshops in the UK

The Red Mason Bee

by Christopher O'Toole, 2000, published by Osmia Publications, ISBN 0 95 39906 0 5, £3.95.

The author has studied wild bees for more than 30 years and is Head of Bee Systematics and Biology Research Unit at Oxford University Museum of Natural History. He is the author of many books and is the founder of the Oxford Bee Company (OBC), a "spinout" company of Oxford University. The OBC market the Mason Bee Cultivation Kit referred to in the book. In some ways it is the advertising of this kit that is the purpose of the book, but in reality that is only part of the story. The book contains a wealth of excellent and important information about the Red Mason Bee, *Osmia rufa*. The book has 26 pages, divided into seven chapters. There are 12 colour plates but no text figures. There is no index, but there is a list of contents and a list of further reading.

The first chapter describes the Red Mason Bee's importance in pollination of various crop plants. This is of increasing importance because of the effect of the scourge of *Varoa* in Honey Bee populations. The theme is the keeping of the Red Mason Bee as a "pet". Once populations are established they tend to remain in the habitat, so although it is a solitary bee and therefore does not form colonies, it will remain in an area as long as conditions there satisfy its needs. In particular these are nest sites – and the kit is designed to provide these, with the minimum of maintenance. There is a discussion of insect pollination, the behaviour of bees, as herbivores, and how plants have exploited this for pollination.

The second chapter describes the bees' natural history and life cycle. Chapter three describes the nester kit provided by the Oxford Bee Company, the advantages of its use and how it may be sited in the garden or allotment and other situations, with details on over-wintering. The instructions are thorough and within any amateur's abilities. It goes on to describe the advantages of using the Red Mason Bee for pollination over the Honey Bee, reaching the conclusion that *Osmia* is better! Chapter four deals with eight frequently asked questions. These cover a broad range and the answers are thorough. Chapter five discusses conservation of wild bees, beginning with the alarming fact that about a quarter of wild bees in Britain are in danger of extinction. The main cause is considered to be agriculture, and one of the main reasons being the removal of hedgerows. It follows this with a discussion of the importance of bees to many aspects of farming, the decline of the Honey Bee due to *Varoa*. The conclusion is that wild bees, particular *Osmia*, are becoming increasingly important to agriculture. Hence emphasising the main theme of this book, the provision of nests, but also stressing the need to grow "bee friendly" flowers. Chapter six continues this theme by describing other solitary bees that may be managed for pollination. Chapter seven describes the obtaining of nesting kits from the Oxford Bee Company.

Whilst the author's aim is unashamedly to promote the nesting kits, this is a very readable and informative little book. The idea of promoting the establishing of populations of solitary bees in this way is interesting. I thoroughly recommend it to all. Indeed, this little book and a nest kit would make a worthwhile present to any child interested in insects. I thoroughly recommend the experience, for what is comparatively very little outlay. Further details may be obtained from their website, www.oxbeeco.co.uk or by telephoning 01509 261654.

Nick Holford

Revisión del género **Phylan** *Stephens 1857 (Coleoptera: Tenebrionidae:* **Dendarini***)*

by Viñolas A., and Cartagena M.C., 2003, published by Argania editio, S.C.P., Barcelona, ISSN – 1695-100X

This represents the first volume in the series "Entomological Monographs of Arganis editio" and was published in April 2003. The text is in Spanish. There is a brief introduction, which includes a description of the genus *Phylan* Stephens, 1832 (the year is given incorrectly in the title, both on the cover and the title pages inside, though it is correct in the text and checklist). There follows a key to subgenera and species. In the systematic part of the text, there is a description of each subgenus. There follows a description of each species, with brief details of distribution and occasionally very brief comments on biology. The Acknowledgements and a checklist of the species follow these. This has extensive synonymy included. There is a bibliographic list and a taxonomic index. There are maps showing distribution, with two maps per page, though up to four species or subspecies may be shown on a single map. All species and subspecies described are included on the maps. These are followed by diagrams of specific features relevant to the key, including a number of the aedeagi. The final section includes the black and white photographs of set specimens of the males.

There is only one member of the genus *Phylan* in the UK, so this book will be of limited value to AES members, unless they are collecting Iberian Coleoptera or are specifically interested in European Tenebrionidae. However, it is worth keeping an eye on this series of monographs as others of greater relevance to the UK fauna may well appear. The volume is well produced, printed on glossy paper. It is in paperback and there is no colour, it being produced in black and white.

Nick Holford

World Catalogue of Insects Volume 4. Pterophoroidea and Alucitoidea (Lepidoptera)

Cees Gielis. 198 pages, Hardback. ISBN 87 88757 68 4. 320 Danish Kroner plus postage. Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark. 2003.

This is the fourth volume of this series, which started in 1998, and is the first to deal with Lepidoptera. The continuing aim of the series is to catalogue the insects of the world and it is clearly a very ambitious project.

The volume now reviewed gives a comprehensive cataloguing of the superfamily Pterophoroidea (Pterophoridae and Macropiratidae) and superfamily Alucitoidea (Alucitidae and Tineodidae) for each species, giving its present generic position, including its author, genus and species names, year of publication, type locality, known distribution by country and host plants where known. These superfamilies are together often referred to as "Plume Moths". The brief summary also gives details of the new synonyms used.

The five-page summary gives information as to the layout of the main text, sources of information and some details of the criterion used, followed by a generic listing of the catalogue.

After the summary, is found the main bulk of the text, namely the catalogue of all the Pterophoroidea (one fossil species is dealt with separately) and the Alucitoidea so far known, jointly covering 110 pages. These represent a comprehensive listing, giving generic and specific names including synonyms, type localities, authors, distribution (by country) and, where known, host plants. A quick review of this section reveals many gaps in the known food plants, surely an area where entomologists around the world can carry out much needed research.

After a lengthy reference list, (again one can tell from this alone the research effort involved), can be found the five indexes, one for the Dipterous parasites and the other for the Hymenopteran parasites, one for the host plants and one for each superfamily.

This newest volume of this continuing "World Catalogue" will no doubt prove to be a valuable reference work, and one can only be impressed at the level of research that has clearly been necessary to produce this, as well as the previous volumes in the series.

Peter May (10514)

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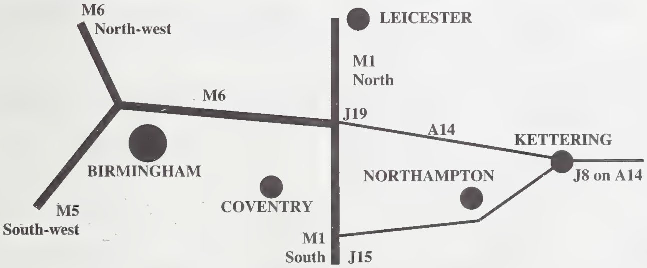

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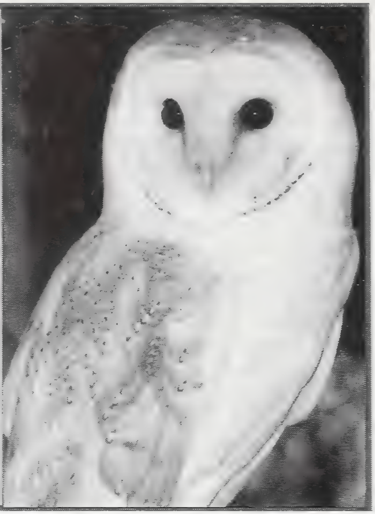

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For further details visit the Society's website at **www.benhs.org.uk** or write to the British Entomological and Natural History Society, Dinton Pastures Country Park, Davis Street, Hurst, Reading RG10 OTH. The BENHS is a charity registered in England number 213149.

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Saturday, 24th April, 2004

at the Royal Entomological Society
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This year the AES Members' Day and AGM is being held at the Royal Entomological Society, Queen's Gate, London.

PROGRAMME

10.30 am	Doors open for members to sign in. Tea and coffee will be available. Coats may be left in an unsupervised cloakroom area at your own risk – the AES will not accept liability in case of a problem occurring.
11.00 am	Welcoming address, followed by a lecture.
12.00 noon	The Annual General Meeting will take place. Nominations for election to the Society's Council or as a Serving Officer of the Society should be forwarded to the Secretary along with the names of two nominators who should be members of the Society. The AGM will be followed by a break for lunch.
2.00-4.00pm	Two further lectures. Members' Day will end between 4.00-4.30pm.

The RES is in close proximity to the Natural History Museum so you may combine your day with a visit to both the AGM and museum.

The RES have no restaurant but there are many restaurants and pubs close by in Kensington.

Unfortunately there are no facilities to enable us to run separate events for Bug Club members.

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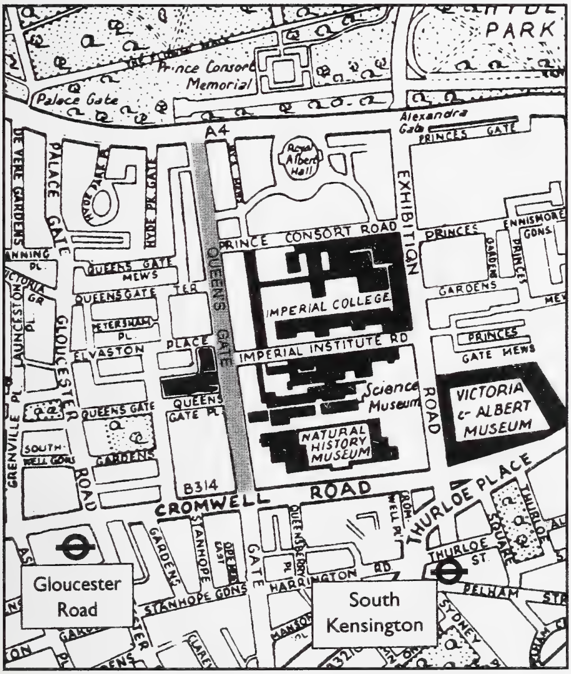

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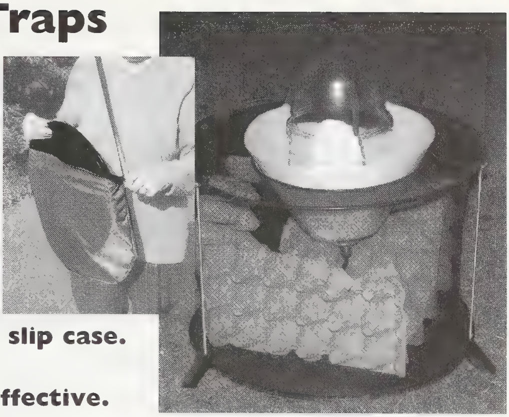

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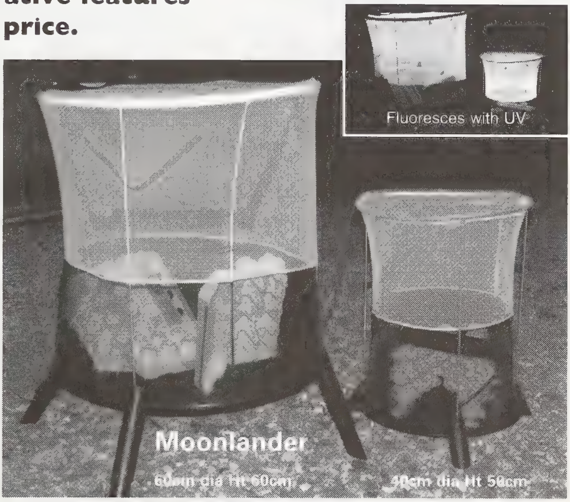

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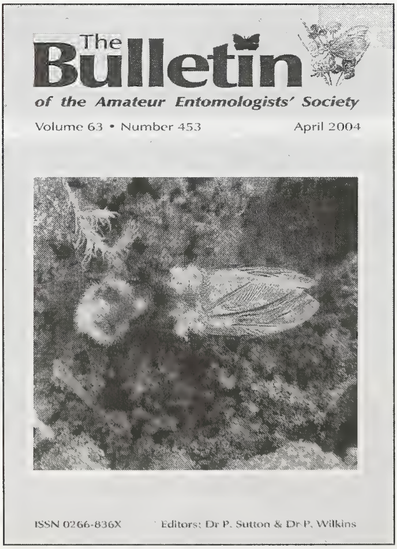

The Bulletin

of the Amateur Entomologists' Society

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ISSN 0266-836X Editors: Dr P. Sutton & Dr P. Wilkins

Photograph: John Walters

The Bulletin cover photograph shows The "Pride of Kent" *Emus hirtus* – a rove-beetle (Coleoptera, Staphylinidae) with a resemblance to a bumblebee, especially when it's wings are extended in readiness for flight.

See the article by Telfer, Lee and Lyons in this issue.

The Bulletin

of the Amateur Entomologists' Society

Volume 63 • Number 453 April 2004

Editorial

I have often asked myself why it should be, when other people's ambitions and personal goals are fulfilled in the form of fast cars, grand houses and the like, that my own heart should skip a beat at the prospect of locating an extraordinarily rare and beautiful dung-dwelling rove beetle. But there you have it, and in this issue we have been lucky enough to procure the talents of those who are familiar with the species in question, the Pride of Kent *Emus hirtus* (more recently described as the Maid of Kent). I have always been fascinated by the fact that hidden beneath the sombre black carapace of many large 'Dor' beetles, is an underside of such exquisite and regal hue, that it does indeed "seem to be cast in brightly polished metals"*. Whilst I was familiar with the Maid of Kent being described as "a beast of a thing looking for all the world like a Bumblebee with huge jaws", it was news to me that it too was endowed with an underside, like that of other coprophilic beetles, of flashing metallic violet, which was displayed each time it 'cocked its tail'. What is the purpose of possessing one of nature's best kept secrets, this shimmering metallic purple or blue underside?

For those members who are awaiting the article on the Status of the Stag Beetle *Lucanus cervus* in Europe (and reviews of recent Stag Beetle related publications), this will be completed in the near future. Messrs Mendez, Thomsen, Smith and myself are currently awaiting permission to reproduce the appropriate European distribution maps for this species.

Some members may be considering a visit to the AGM at the Royal Entomological Society on the 24th of April, perhaps combined with a trip to the Natural History Museum. This year we have a superb line-up of speakers, who will be describing some of the remarkable species to be found on Brownfield sites in the UK. We look forward to seeing you there if you can make it!

Phil Wilkins and I would like to take this opportunity to sincerely thank members who provide articles for the *Bulletin*. Your considerable efforts are always very much appreciated. Thank you.

Peter Sutton

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* this description was written by Chris Haes in his 'Natural History of Sussex' (1977) whilst discussing the colourful attributes of another group of shiny metallic beetles, the Leaf Beetles (Chrysomelidae).

Piracy at the publishers — obscure and curious items of entomological literature, part 7

by Richard A. Jones

135 Friern Road, East Dulwich, London SE22 0AZ
bugmanjones@hotmail.com

A continuing series of some strange books that have found their way into my library. Not useful key works by important entomologists, but strange oddities, quaint, off-beat or just plain entertaining.

A conspectus of the butterflies and moths found in Britain by James Rennie, London, William Orr, 1832.

My copy of this small duodecimo 328-page volume, in almost unreadably tiny (6 point?) type, looks hardly touched by human hand. The joints of the meager cloth binding were damaged and broken when I received the book and the corners were bumped, but the paper was crisp, the tight text unsmudged and there was no foxing or spotting anywhere. And yet the book had obviously had an interesting history.

On the front cover there is a black-bordered sticker on green paper proclaiming the book to be the property of "The Epping Forest and County of Essex Naturalists' Field Club Library". The title verso is rubber-stamped in purple ink "E.F.C. catalogue" and the title page is blind-stamped "County Borough of West Ham. Essex Museum Library. Essex Field Club", but both marks are counter-stamped "withdrawn". Inside the front boards is another sticker with the seven rules of the library, but the contents of the book were so pristine that I wondered whether the book had ever been borrowed? Maybe not.

Hardly visible at the top left corner of the inside front board is a single word written faintly in pencil "Basement". So had the book been in storage for years? Stronger inference can be guessed from the anonymous black-inked warning written below it: "The sale of this book was stopped by injunction of the Court of Chancery, being to a great part a piracy of a similar work published by Brown."

That work, published by Baldwin and Cradock rather than Brown*, was written by the well-known entomologist J.F. Stephens, and this was the book that launched a famous law-suit. Stephens brought the suit because he claimed Rennie had plagiarized his major work *Illustrations of British entomology; or a synopsis of indigenous insects...*etc. Rennie won the case, but by all accounts most entomological sympathy lay with Stephens.

Rennie's book is a curious compilation. It starts with a short preface bemoaning the language of entomological description and deriding terms such as 'flavous' and 'luteus' when 'yellow' is perfectly sufficient. He then mocks some unnamed author (we are given no clues to the identity) for describing moths with expressions like 'a very obsolete spot' and 'a cinerascent striga totally obliterated', wondering how one can perceive something that is obsolete or totally obliterated, much less its colour.

Oddly, Rennie names Stephens in this preface and urges every reader to buy a copy of the *Systematic catalogue* that Rennie states is the book he followed for the taxonomic order of the *Conspectus*.

The majority of the text of the book gives 6 to 10 lines of description and details for each species. Rennie uses some odd names, particularly for the butterflies. For brimstone he uses 'primrose', for green-veined white 'navew', for small white 'turnip' and for red admiral 'alderman'. There are also many names without description, dismissed as 'said to be British by mistake', 'very doubtful as a British species' or 'said to be British by doubtful authority'. These 'erroneous' species have names like 'goddess' *Melitaea dia*, 'crimson ringed' *Doritis apollo* and 'Abbot' *Argynnis niobe* and virtually all of them are credited to .... J.F. Stephens. Is this a coincidence?

* Perhaps this was a reference to Mr Orme Brown of the publishing company Longman, Orme Brown, Green and Longmans which produced other books by Stephens including *A manual of British Coleoptera or beetles*, which appeared in 1839.

* * *

Request from Council

The Society is at present trying to locate storage within a reasonable travelling distance of Kempton Park Racecourse, Sunbury to primarily store the display boards and other equipment used at the Annual Exhibition. Anyone who feels they may be able assist with this is asked to write to the Society at the usual address as soon as possible.

The Pride of Kent *Emus hirtus* (L. 1758) at Elmley Marshes RSPB reserve

by Mark G. Telfer[1], Paul Lee[2] and Graeme Lyons[1]

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Emus hirtus is a spectacular and extremely rare staphylinid beetle (rove beetles or devil's coach-horse beetles) known colloquially as the "Pride of Kent" and more recently also as the "Maid of Kent". It was once more widespread with nineteenth and early twentieth century records from Cornwall, Devon, Dorset, the New Forest in Hampshire, Surrey, Sussex, Kent, Essex and Norfolk. It was accorded Endangered (RDB1) status by Hammond (1987) in the insect Red Data Book at which time it had not been reliably recorded anywhere in Britain since 1966, and not in north Kent since the 1950s. There was even speculation that it may have become extinct in Britain. The decline of *Emus hirtus* in Britain, at the north-western limit of the species range, appears to have been mirrored across northern Europe (Hammond, 1987). Since 1997, it has been recorded from two Royal Society for the Protection of Birds (RSPB) reserves in north Kent: Elmley Marshes and Rye Street (Cadbury and Shardlow, 1998; Cadbury, 1999; Cadbury *et al.*, 2001; Gurney and Cadbury, 2003). Though there has been a series of records, it remains an elusive and rarely seen beast.

A certain amount of folklore surrounds *Emus hirtus* in Kent. A.M. Massee told a story that on the hottest days of summer, *Emus hirtus* would fly in to very fresh liquid cow-pats, dive in, and eventually emerge, their golden hairs unsullied and fly off to the next cow-pat (Eric Philp, pers. comm.). However, in 1998, Alex Williams spent the six hottest days of the year following the cattle herd around Elmley Marshes without any sign of *Emus* (Williams, 1999). The web-pages of Foreningen SydOstEntomologerna (the Society for Entomologists in South-eastern Sweden) also refer to the requirement for fresh dung and give the following instructions for catching *Emus hirtus*: ".. smack the beetle with a firm hand down into the smeary dung, find it by digging and put it in your tube with some absorbent tissue" (www.bom. hik.se/~fsoe/Emus%20hirtus.htm). Ultimately, a certain amount of luck is required to encounter *Emus hirtus* – in 1998 while assistant warden Adam Rowlands was riding his motorbike at Elmley Marshes, he crashed into a flying *Emus hirtus* which dropped inside his shirt!

Wednesday 6 August 2003 was predicted to break the UK record for the highest temperature. In the event, although the UK record was not broken, it briefly held the record for the hottest day of the year, with a temperature of 36.4°C recorded at Gravesend, Kent. MGT and GL spent from 11.00 to 16.00 surveying for *Emus hirtus* in the compartment with the largest number of cattle. The survey approach was to look for surface active adults on or around cow pats, approaching the cow pats quite cautiously and using binoculars to look for adult *Emus* which are potentially quite shy of approaching humans. With this approach, a single adult *Emus hirtus* was spotted within five minutes of starting the survey but it proved to be the only sighting of the day. Indeed this proved to be the only sighting of the year despite considerable survey effort by PL (Lee, 2004) and by Elmley Marshes reserve staff.

The *Emus hirtus* specimen was spotted running over the surface crust of a cow pat which was estimated to be three or more days old, lying on a trampled cattle path through a well-structured grass sward at TQ96306755. The beetle was spotted from about two metres away and was not especially shy of our approach, nor especially difficult to catch, certainly not compared to the many specimens of *Ontholestes murinus* (a staphylinid beetle of similar habits) seen on and around cow pats.

The captive specimen was kept as cool as possible for the rest of the day and given a couple of live adult *Sphaeridium* (hydrophilid dung beetles) which it polished off. Later in captivity it also demolished a live *Aphodius rufipes* (a common 10mm long dung beetle). It was taken down to South Devon to be photographed by John Walters. One of the most striking things about the beetle was it's habit of curling up it's abdomen to expose a metallic purple underside, similar to a dor-beetle *Geotrupes* sp (Plate 4). After it's photo-shoot, the Pride of Kent was returned to its native county and was released back on to the Elmley Marshes on 14 August. After a brief grooming session, it took off vertically and flew away.

Emus hirtus has often been recorded in flight and all surveyors in 2003 kept their eyes open for them in warm, humid weather conditions. There is some resemblance between *Emus hirtus* and the banded species of bumblebees (see cover photograph). However, *Emus hirtus* is fairly distinctive in flight, and like other beetles flies in a direct line with little manoeuvrability, at about head height (Barry O'Dowd, pers. comm.).

Ecology and Conservation

Emus hirtus is a top predator of the dung community, preying on adult and larval beetles and flies (Lee, 2004). Hammond (1987) and Hyman and Parsons (1994) also mention occasional records of the beetle from carrion, decaying fungi and sap runs. As a top predator, its decline and disappearance from most of its British range indicates the wider declines suffered by dung-associated invertebrates during the twentieth century.

The normal habitat for *Emus hirtus* would appear to be rough pasture grazed by cattle or horses. The loss of old pastures through improvement and conversion to arable agriculture has been suggested as a possible cause of the beetle's decline in the twentieth century (Hyman and Parsons, 1994).

The use of worming chemicals on livestock has been shown to have adverse direct and indirect effects on dung invertebrates. The impacts of avermectins on *Emus hirtus* have not been studied but there is likely to be a direct toxic effect and an indirect effect of reduction in prey availability. The RSPB only allows cattle to graze on Elmley Marshes that have not recently been treated with avermectins and this is probably an important factor in the survival of *Emus hirtus*.

Acknowledgements

Particular thanks to John Walters for his behavioural observations, comments on a draft, and for his superb photographs.

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Classic Entomological Sites: Branscombe Beach and Undercliff, East Devon

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Introduction

The small picturesque village of Branscombe is situated on the South-east Devon coastline between Sidmouth and Beer. The crystal clear brook that runs through the village meets a long stretch of shingle beach at Branscombe Mouth, which extends from Sidmouth to Beer Head. On either side of this natural valley, running along side the shingle beach in each direction, are maritime cliffs and slopes which are characterised by soft-rock cliffs (Figure 1) and hard chalk cliff outcrops (Plate 2). The whole stretch of coastline from Sidmouth to Beer is a Site of Special Scientific Interest (SSSI) and an area of outstanding entomological importance. It provides shingle habitat for one of our rarest orthopterans, the Scaly Cricket *Pseudomogoplistes vicentae*, and woodland habitat for an increasingly important population of the Wood White butterfly *Leptidea sinapsis*, but it is the complex of habitats associated with soft-rock cliffs that provide the areas of greatest entomological interest.

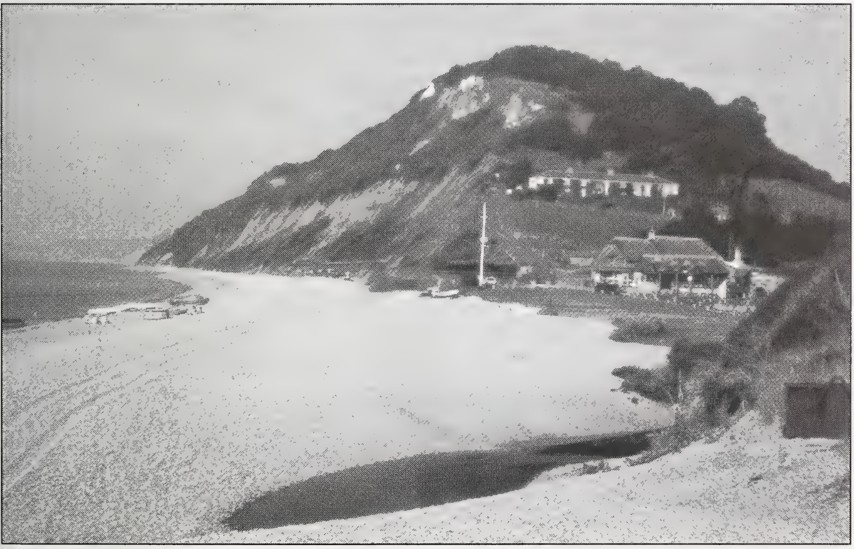

Figure 1. Branscombe's freshwater brook disappears into the shingle at Branscombe Mouth (looking west towards Sidmouth)

The dynamic nature of this habitat provides a suitable environment for many rare and threatened species, including a small number, such as the Cliff Tiger Beetle *Cicindela germanica*, and the Shore-bug *Saldula arenicola*, that are entirely restricted to soft-rock cliff habitats in Britain.

This article focuses primarily on the species that can be found on the area of shingle beach and soft-rock undercliff between Branscombe Mouth and Sherborne Rocks (Grid Ref: SY 208 881 – SY 221 879). It also provides an overview of the extraordinary number of insects of conservation importance that can be found along the Sidmouth to Beer stretch of coastline in South-east Devon (which includes Weston Cliff NT, Weston Mouth, Branscombe Pasture (SSSI) and Branscombe Hole (SSSI).

Branscombe Beach and Undercliff in context

As mentioned above, Branscombe beach and undercliff form part of the Sidmouth to Beer stretch of Devon coastline, which is a SSSI. This in turn forms part of the East Devon Landscape, which was designated as an Area of Outstanding Natural Beauty (AONB) in 1963, thus receiving statutory protection under UK law with respect to conserving its natural beauty. Sidmouth to West Bay has been selected as a Special Area of Conservation (SAC), and its outstanding flora, fauna and habitats have been put forward as qualifying features for this designation.

Maritime cliff and slopes

The Habitat Action Plan (HAP) for Maritime Cliff and Slopes (JNCC, 2001) discusses a range of issues, from the classification of maritime cliff and slopes, to the current status of, and threats to, this important habitat in the British Isles.

Maritime cliffs and slopes are essentially divided into two groups: 'hard' cliffs and 'soft' cliffs. 'Hard' cliffs are typically characterized by erosion resistant rocks which form the classic vertical and steeply sloping cliffs with little vegetation. (They can also be formed of 'softer' rocks like chalk when this erodes to a vertical profile). 'Soft' cliffs are formed from less resistant rocks such as boulder clays and shales, and are characterized by landslips and rapid erosion. This instability leads to the formation of shallower cliff profiles, which are more easily colonized by vegetation, producing a complex mosaic of successional communities, from pioneer and ruderal assemblages, through to well-established scrub and woodland communities.

The undercliff to the east of Branscombe is a mixture of both cliff types, containing, as it does, 'hard' chalk outcrops interspersed with 'soft' cliff sites. Between them, these cliffs provide an entire spectrum of possible habitats, from hard cliff crags, which provide nest sites for Peregrine Falcons *Falco peregrinus* and Ravens *Corvus corax* at Branscombe; to the wet undercliff flushes that provide an essential habitat for some of our most threatened invertebrates.

The woodland habitats associated with the soft-rock cliff region of the South Devon and Dorset coast are particularly important, and as such, have been used as selection criteria for SAC designation. These coastal landslip *Tilio-Acerion* woodlands are usually dominated by Ash *Fraxinus excelsior,* Lime (generally Small-leaved Lime *Tilia cordata* and rarely Large-leaved Lime *Tilia platyphyllos*), Wych Elm *Ulmus glabra* and non-native Sycamore *Acer pseudoplatanus.* They provide a shady microclimate, which has its own associated flora and fauna. The flora of the well-wooded East Cliff contains such botanical interest as the rare Purple Gromwell *Lithospermum purpurocoeruleum,* numerous Ivy Broomrape *Orobanche hederae,* and blankets of Dog's Mercury *Mercurialis perennis* which play host to the Dog's Mercury Flea Beetle *Hermaeophaga mercurialis* (Nationally scarce, a).

Bare ground habitats produced by landslips, local 'slumps' and general erosion provide sites for a plethora of bare ground nesting species, and are particularly important for the aculeate Hymenoptera. Disturbed ground also favours a rare species of plant, the Nottingham Catchfly, *Silene nutans,* which is the host for an even rarer species, the White Spot moth *Haldena albimacula* (RDB3).

Figure 2. Branscombe East Cliff: an overgrown undercliff footpath burgeoning with the fruits of summer.

Seepages, undercliff flushes and springs are also an important feature of soft-rock cliffs, and a number of species which are associated with, if not dependent on, this habitat are described in this article.

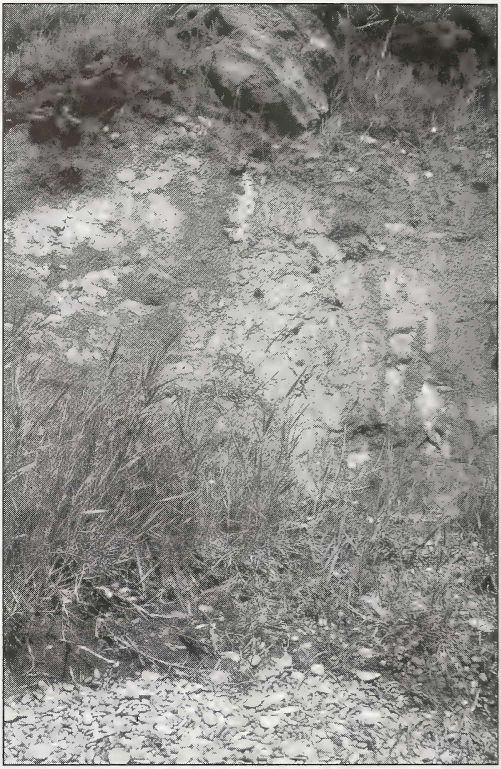

Figure 3. Seepage sites and undercliff flushes are an essential habitat feature for species such as the Cliff Tiger Beetle *Cicindela germanica* and Cepero's Groundhopper *Tetrix ceperoi*. The stands of Common Reed *Phragmites communis* that are often associated with these features also provide habitat for a number of rare Diptera (*e.g. Platycephala umbraculata*, RDB2), Coleoptera (*e.g. Drypta dentata*, RDB1) and Hymenoptera (*e.g. Mimumesa atratinus*, RDB2; and *Mimumesa unicolor*, Na), which, like the Cliff Tiger Beetle, are entirely restricted to soft-rock cliff habitats in Britain.

The invertebrate fauna of the Branscombe region

Orthoptera and allied species (Grasshoppers, crickets, bush-crickets, earwigs and cockroaches

The grasshoppers, bush-crickets and allied species are well represented. and include:

Tettigoniidae (Bush-crickets)

Grey Bush-cricket *Platycleis albopunctata* (Nationally scarce, b), Dark Bush-cricket *Pholidoptera griseoaptera*, Great Green Bush-cricket *Tettigonia viridissima*, Oak Bush-cricket *Meconema thalassinum*, Speckled Bush-cricket *Leptophyes punctatissima* and Long-winged Conehead *Conocephalus discolor*.

Gryllidae (Crickets)

Scaly Cricket *Pseudomogoplistes vicentae* (RDB1, but this should be revised)

The Scaly Cricket *Pseudomogoplistes vicentae*: shingle specialist extraordinaire

For many years, the Scaly Cricket *Pseudomogoplistes vicentae* (Plate 2) was known from a single site in Northern Europe, at the eastern end of Chesil Beach in Dorset. It was discovered at this site in 1949 and for many years, it was seen only sporadically with records of single specimens being sighted once every few years. The first specimen captured was a female, and it was a further 28 years before the first male was discovered. (Until this discovery there had been speculation that the British population might be parthenogenetic!) In the late 1990's that picture began to change, with the discovery of colonies at Branscombe in Devon, on the Channel Island of Sark, and at Granville in the Cherbourg Peninsula in France (Sutton, 1999). More recently, this species has also been found at a site in Wales, and on the Channel Island of Guernsey.

It had always been assumed that this species was at extremely low density on Chesil beach, and vulnerable to extinction, until a study by Peter Kirby (1995) revealed that not only was the population thriving, but that for many years, entomologists had been looking for it in the wrong place! Again, it had been assumed that the uniquely sheltered conditions at eastern end of Chesil Beach were an essential factor for the continued survival of the Scaly Cricket in Britain, when in fact, the true habitat of this species, was the most hostile part of the seaward facing shingle bank!

Another factor in the perceived rarity of this elusive species was that, as a subterranean resident of shingle, it is particularly difficult to capture and record. However, once the correct method of capture had been found, in this case, the use of pitfall traps in or near the seaweed strandline (Figure 4), it could be located with relative ease. (It is likely that a number of rare species, such as the RDB1 weevil, which was found to be locally abundant at certain grassland sites when a suction hoover was utilized, or the RDB1 millipede, which could be found with ease by burying baited bird feeders in shingle, are only as rare as they seem to be in the absence of a suitable method of collection.)

Although the Scaly Cricket does not appear to be in any danger of extinction at the present time, it is, nevertheless, still a rare species which is restricted, in spite of considerable searches at suitable shingle habitats elsewhere in the country, to three sites on the British mainland. In view of the tenacity of this species to survive under the harshest conditions, it should no longer be considered to be an endangered (RDB1) species, but these three known populations, however, remain vulnerable to marine pollution events.

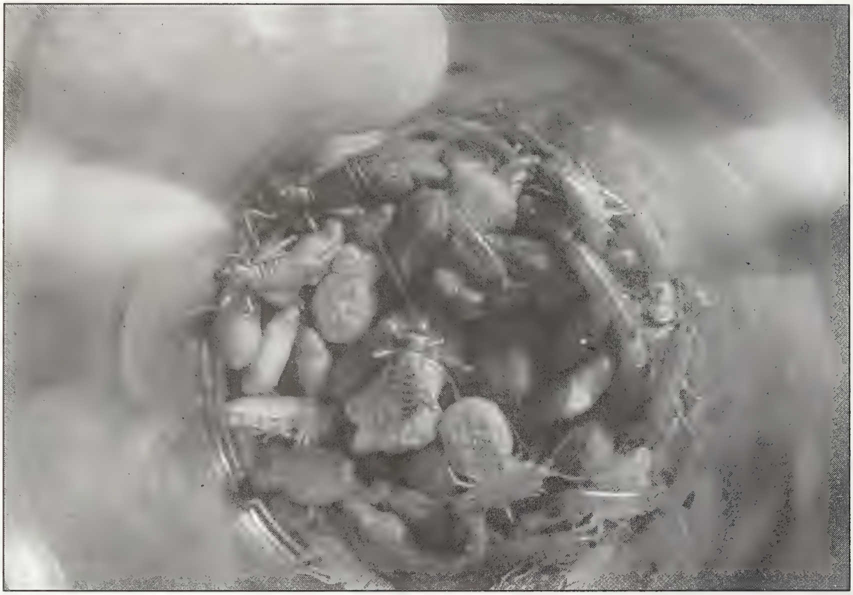

Figure 4. Three female Scaly Crickets and amphipods captured from the seaweed strandline at Branscombe Beach using a plastic pint pot baited with cat biscuits. This stretch of beach was heavily used by holiday-makers, but the population, apparently, continues to thrive.

Tetrigidae (Ground-hoppers)

Cepero's Ground-hopper *Tetrix ceperoi* (Nationally scarce, a) and Common Ground-hopper *Tetrix undulata.*

Cepero's Ground-hopper (Figure 5) is another species associated with seepage sites and undercliff flushes, where it feeds on mosses and algae. It is possibly under-recorded along the East Devon coast, where plenty of suitable habitat exists.

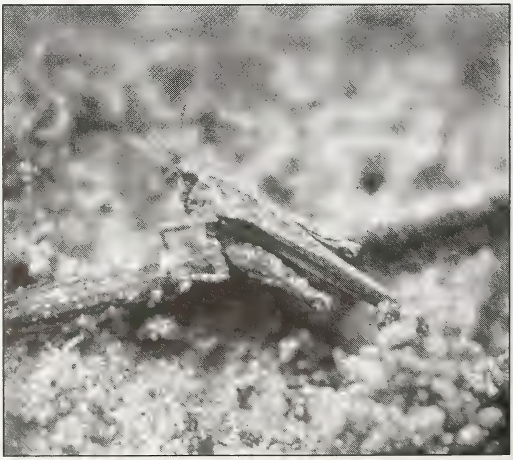

Figure 5. Cepero's Ground-hopper can be found on the wet soils around seepage sites on soft -rock cliffs.

Acrididae (Grasshoppers)

Rufous Grasshopper *Gomphocerripus rufus* (Nationally scarce, b), Common Green Grasshopper *Omocestus viridulus*, Field Grasshopper *Chorthippus brunneus*, Mottled Grasshopper *Myrmeleotettix maculata* and Meadow Grasshopper *Chorthippus parallelus*.

The Rufous Grasshopper (Figure 6) is a nationally scarce species restricted to warm sheltered habitats on calcareous soils. The population at Branscombe is unusual in that it tends to produce individuals of the extremely rare purple colour form (Plate 3) on a regular basis. It is possible that a climatic factor may be involved in the expression of the genetic material for this colour form. This theory has been postulated previously for the equally rare purple and yellow form of the Wart-biter *Decticus verrucivorus* (Cherrill and Brown, 1991) (which is now believed to have been lost from the British population as the result of a genetic 'bottleneck' in the 1990's (J. Shaughnessy; pers. comm, 2002).) In Devon, this species is confined to the undercliff region around Branscombe (Sutton and Cooper, 2000).

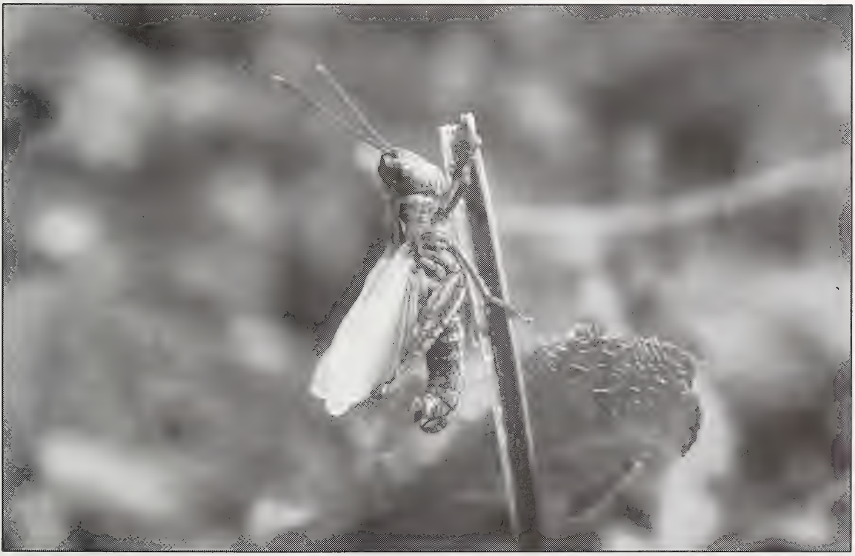

Figure 6. A newly emerged Rufous Grasshopper imago drying its wings.

Blattodea (Cockroaches)

The Tawny Cockroach *Ectobius pallidus* (Nationally scarce, b) and the Lesser Cockroach *Ectobius panzeri* (Nationally scarce, b) are both recorded from grassy and scrubby areas on the undercliff.

Dermaptera (Earwigs)

Only the Common Earwig, *Forficula auricularia* has been recorded from this region, but an unconfirmed report of the Giant or Tawny Earwig *Labidura riparia* (Plate 2) was received from the top of Coxes Cliff nearby in 1982. This large species was formerly recorded from the Christchurch and Bournemouth areas of Hampshire and Dorset from 1808 until 1919 (and possibly to the 1930's), and also from Folkestone in Kent in the 1870's (Marshall and Haes, 1988). It is possible that this striking and unmistakable species could be present at Branscombe, where it might possibly construct its burrows at the foot of soft rock cliffs, particularly where areas of loose sandy soil predominate.

Lepidoptera (Butterflies and moths)

Butterflies

A number of species have been lost from the Sidmouth-Beer stretch of coastline over the past century for a variety of well-documented reasons, which reflect the deterioration of their respective habitats (Asher *et al*, 2001). These include the Large Blue *Maculinea arion*, Lulworth Skipper *Thymelicus acteon* (last recorded at the base of Sidmouth Cliffs in 1967), High Brown Fritillary *Argynnis adippe*, Adonis Blue *Lysandra bellargus*, Chalkhill Blue *Lysandra coridon* (a pair of Chalkhill Blues were recorded at Branscombe East Cliff on 21.viii.03 by Phil Parr, (Bristow, 2003)), Small Blue *Cupido minimus*, Pearl Bordered Fritillary *Boloria euphrosyne*, Marsh Fritillary *Eurodryas aurinia*, and Grizzled Skipper *Pyrgus malvae*.

However, many species are still present in the region, and those of note include the Dingy Skipper *Erynnis tages*, Green Hairstreak *Callophrys rubi*, Brown Argus *Aricia agestis*, Holly Blue *Celastrina argiolus*, Marbled White *Melanargia galathea*, Wall *Lasiommata megera*, Dark Green Fritillary *Argynnis aglaja*, Clouded Yellow *Colias croceus* (Plate 1; Figure 7) and of course, the Wood White *Leptidea sinapsis* (Plate 1; Figure 8).

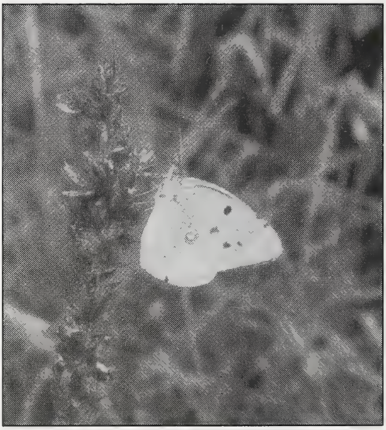

Figure 7. Clouded Yellow *Colias croceus* feeding on Purple-loosestrife *Lythrum salicaria*, (the foodplant of the RDB1 weevil, *Hylobius transversovittatus*), which was growing where the well-vegetated soft cliff meets the edge of the shingle beach. In favourable years, migrating Clouded Yellows have been recorded at Branscombe in considerable numbers.

The Wood White at Branscombe, *sinapsis or reali*?

The observation of courtship behaviour of the Wood White at Branscombe undercliff in August 2000, led to a discussion which highlighted the possibility of the East Devon population being Real's Wood White *Leptidea reali* (Nick Bowles; pers. comm., 2002), as opposed to the Wood White *Leptidea sinapsis*. Real's Wood White, which was only recognised as a separate species in 2001, is widespread in Ireland, but has not (yet?) been recorded from the British mainland. The Wood White on the other hand (which is apparently confined to Hazel scrub on the limestones of The Burren region in Ireland), is the rare and declining species we are familiar with on the British mainland. The courtship behaviour of the pair of Branscombe specimens (Figure 8), differed from what had previously been observed for this species which showed that the female remains absolutely motionless throughout the courtship display. This was not the case for the observed Branscombe specimens, where the female mirrored each rapid wing flap of the male with one of her own (Sutton, 2000a). If the Branscombe specimens are Real's Wood White, this would certainly explain the apparent preference (Tomlinson and Still, 2002) of this species for more 'open' habitats than our own Wood White.

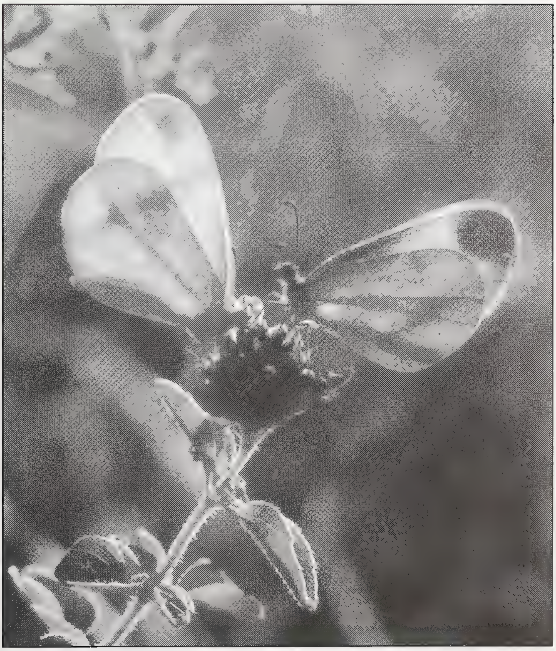

Figure 8. Two second brood Wood Whites engaged in a courtship display on an undercliff path at Branscombe East Cliff.

Moths

The complex of habitats to be found in the Branscombe region are home to a great variety of moth species, making this an enticing prospect for those who enjoy the company of a moth lamp, a warm jacket, and a flask of tea.

An endangered species of Tortix moth, *Cydia gemmiferana*, has been recorded from this area. This species is known only from Hampshire, the Isle of Wight and Devon, where it can be found on landslips which support its larval foodplant, the Narrow-leaved Everlasting Pea *Lathyrus sylvestris.*

The White Spot *Hadena albimacula*: confirmation of a breeding population in Devon

A true speciality of the Branscombe undercliff is the Red Data Book moth, the White Spot *Hadena albimacula* (Figure 9). This species is recorded from only a few localities on the south coast of England where its larval foodplant, the rare Nottingham Catchfly *Silene nutans* grows. The larvae feed on the seeds and seed capsules of this plant. The recently published *Field Guide to the Moths of Great Britain and Ireland* (Waring, Townsend and Lewington, 2003), (which is thoroughly recommended), states that the White Spot is currently known to breed in at least six sites on the south coast of England, and in addition, "Continued breeding at a site near Beer, in Devon, is probable but needs confirmation."

On the 14th of June 2003, Roy McCormick set out with a party to try and confirm the presence of this UK BAP (Biodiversity Action Plan) species at Branscombe (McCormick, 2003) and produced, in a single night, a list of 117 moth species including four specimens of the target species! Among the haul were the nationally scarce Chalk Carpet *Scotopteryx bipunctaria*; the recent colonist, the Cypress Carpet *Thera cupressata*; the Privet Hawk Moth *Sphinx ligustri*; and the immigrant, the Small Mottled Willow *Spodoptera exigua.*

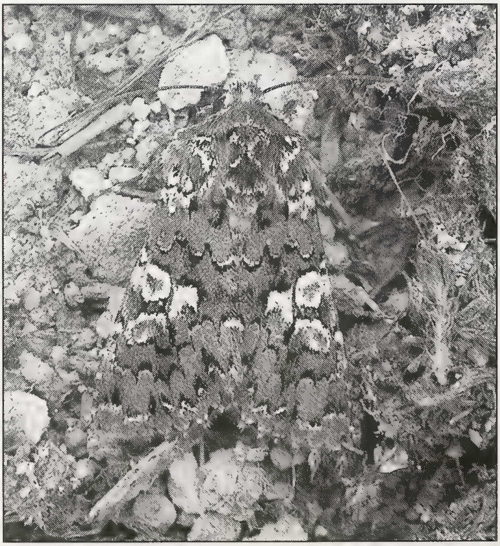

Figure 9. The presence of a breeding population of the White Spot at Branscombe has recently been confirmed.
(This digital image was recorded at the Branscombe site by John Walters.)

Other rare and nationally scarce species recorded from the Branscombe region include: *Cosmoites stabilella*, *Epiblema cnicicolana*, *Agdistis staticis*, Beech-green Carpet *Colostygia olivata*, Annulet *Gnophos obscurata*, Brindled Ochre *Dasypolia templi*, Twin-spotted Wainscot *Archanara geminipuncta*, Five-spot Burnet *Zygaena trifolii*, Oak Eggar *Lasiocampa quercus*, *Agonopterix nanatella*, *Trifurcula griseella*, *Nemapogon wolffiella*, *Leucoptera lathyrifoliella*, *Pelochrista caecimaculana*, *Dichrorampha senectana*, *Mecyna asinalis*, *Oncocera semirubella*, Small Eggar *Eriogaster lanestris*, Red-tipped Clearwing *Synanthedon formicaeformis*, Jersey Tiger *Euplagia quadripunctaria*, Crescent Dart *Agrotis trux lunigera*, L-album Wainscot, Mere Wainscot *Photedes fluxa*, *Ethmia dodecea*, and *Telephila schmidtiellus*.

John Walters (pers. comm., 2004) has also recently recorded the Six-belted Clearwing (10 males at a pheromone trap, 21.vi.01) and the continued presence of the Small Eggar (31.v.02) at Branscombe.

Coleoptera (Beetles)

The Branscombe region has much to offer the coleopterist but there appears to be little data describing the beetle fauna of this site. There are many species present at Branscombe which are not recorded in available literature. Luff (1998), for instance, has no modern records for the carabid, *Licinus punctatulus* in Devon, but this, and many other notable species are present at Branscombe. There is clearly an opportunity for coleopterists to study this area and put together a representative list of species for this site.

Among species that may be encountered at Branscombe are the Glow-worm *Lampyris noctiluca* (Plate 1) the Bloody-nosed Beetle *Timarcha tenebricosa* (Plate 1), and a fine selection of ground beetles. Some local species which have been recorded include the chrysomelids: *Calomicrus circumfusus*, a leaf beetle which frequents gorse on the undercliff, and *Longitarsus obliteratus*, a leaf beetle which is associated with herbs growing on the calcareous outcrops. As previously mentioned, the Dogs-mercury Flea Beetle *Hermaeophaga mercurialis* can also be found on the wooded undercliff.

It is possible that, with the extensive hymenopteran fauna present at Branscombe, and in the light of the recent discovery of the Rugged Oil Beetle *Meloe rugosus* in Dorset (Walters, 2003), there may yet be discoveries of this or other members of the Meloidae in this region.

The Cliff Tiger Beetle *Cicindela germanica*: rediscovered in Devon at Branscombe undercliff

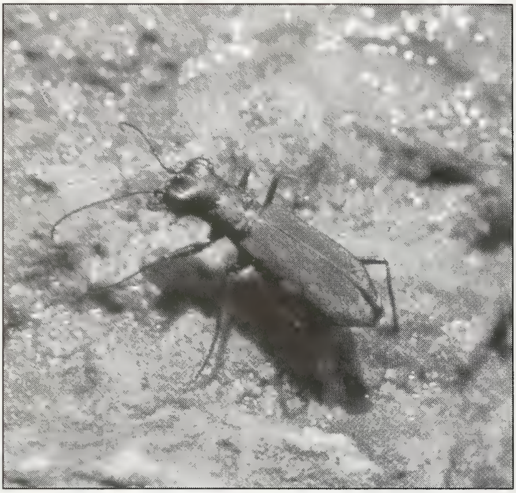

Figure 10. The Cliff Tiger Beetle *Cicindela germanica,* recently rediscovered in Devon.

The Cliff Tiger Beetle *Cicindela germanica* (RDB3) is one of a group of terrestrial invertebrates that are known only from coastal soft-rock cliff habitats in Britain (Howe, 2003), where it is strongly associated with undercliff flushes and seepage sites. In recent years, available literature (Hyman and Parsons, 1992; Luff, 1998; UK BAP, 1999) has suggested that this species, in accordance with post-1970 records, is confined to soft-rock cliff habitats in Dorset and the Isle of Wight. It has recently been rediscovered in Devon on the landslips between Branscombe and Beer Head at very low density. John Walters (pers. comm., 2004) discovered a number of burrows in May 2001 with fully grown larvae in the vicinity of seepage sites, and their identity was subsequently confirmed as this species. (Further details for this species, including a UK distribution map, can be found in the illustrated article on British Tiger Beetles in *Bulletin* No. 434).

The Glow-worm *Lampyris noctiluca*: NO to Viagra

NO is nitric oxide, a gaseous molecule consisting, quite simply, of a single atom of oxygen bound to a single atom of nitrogen. Incredibly, this, most simple of chemicals, is responsible for regulating a multitude of important biological processes, and the three scientists who discovered the role of NO as a signaling chemical all received the Nobel Prize in 1998. It is remarkable that long before this discovery, the founder of this prestigious award, Alfred Nobel, was prescribed nitroglycerine (one of the ingredients of dynamite, which was in fact Nobel's own invention!), to alleviate heart trouble. Both nitroglycerine, and its chemically similar pharmaceutical analogue, Viagra, (which was originally used to combat coronary heart disease) produce the NO necessary to protect the heart against ischemic attacks.

Recently, researchers have found that NO is used by bioluminescent beetles to 'switch' light producing cells on and off. Many species are known to produce light as a method of communication, from bioluminescent bacteria to deep sea fish, but it is the members of the Family: Lampyridae, the glow-worms and fireflies, who are the undisputed masters of 'cold light' communication. Each species has its own signal, from the reassuringly constant luminosity of our own Glow-worm *Lampyris noctiluca* (Plate 1), to the elaborate courtship displays performed by some tropical species which are characterized by their extraordinary ability to produce rapid and precisely-timed bursts of light.

The luciferin-luciferase method of light production, which is common to a wide range of unrelated organisms, has been known for a long time, but the control mechanism used to switch light production on and off in certain species has remained a mystery until now. Researchers found that fireflies that were exposed to NO began to glow or flash continuously, but stopped when the NO source was removed. This was attributed to the ability of the NO molecule to inactivate 'oxygen gate-keeper' cells in the air tubes of the light-producing organs, which then allowed oxygen to pass into the light-producing cells and react with luciferin and luciferase to produce light.

An excellent and thoroughly recommended book on Glow-worms by John Tyler (1994) describes all aspects concerning the British Glow-worm *Lampyris noctiluca*, from life-history and habitat preferences, to light production and the perceived threat to this species from light pollution.

Hylobius transversovittatus: Saviour of New York wetlands?

Hylobius transversovittatus, a weevil from the Family: Curculionidae, is a very rare species in the British Isles. It was originally considered by Shirt (1987) to be a RDB3 (Rare) species, but this status has since been revised to RDB1 (Endangered) by Hyman and Parsons (1992). It is a phytophagous species associated with Purple-loosestrife *Lythrum salicaria*, and the gall-forming larvae feed on the roots of this plant. This species has been recorded from coastal undercliff habitat in South-east Devon (Ashe, 1944), where it has not been recorded for over half a century, and on grazing levels in North Somerset, where it is currently restricted to a small handful of 1 km squares. There remains the possibility that this species may yet be rediscovered on its foodplant, Purple-loosestrife, which is not uncommon on the coastal landslips of South-east Devon. Adults have been recorded from May to September around the roots of the plant.

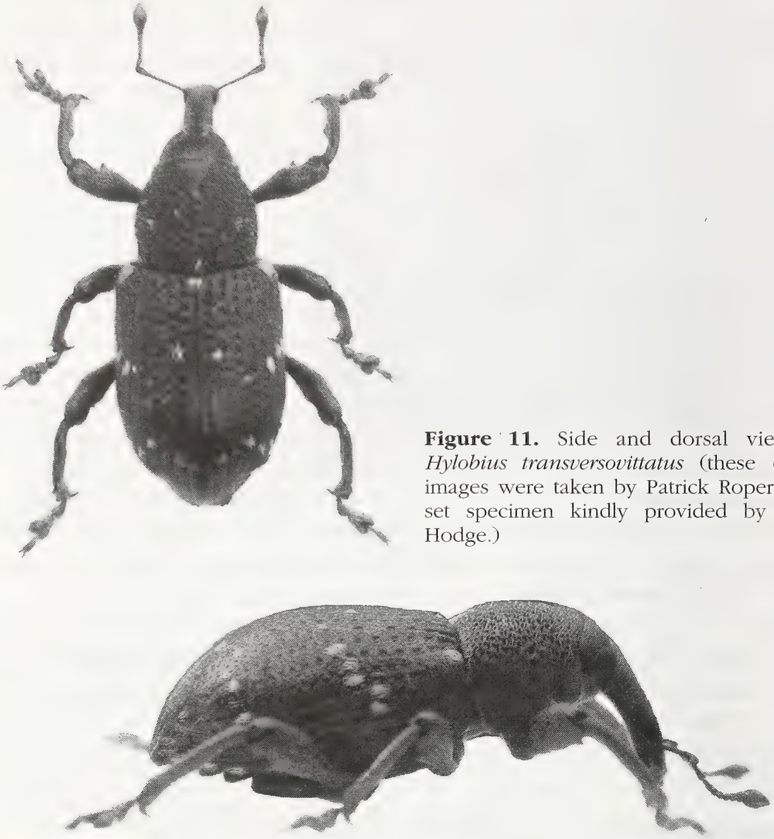

Figure 11. Side and dorsal view of *Hylobius transversovittatus* (these digital images were taken by Patrick Roper, with set specimen kindly provided by Peter Hodge.)

Interestingly, *Hylobius transversovittatus* has been used, apparently successfully, to control Purple-loosestrife in the United States and Canada (Blossey *et al.*, 1994), and has been introduced, among other suitably infested sites, to the wetlands of New York, Pennsylvania and Washington State. On the North American Continent, Purple-loosestrife is an invasive alien species which can spread unchecked in the absence of its natural adversaries, and it has proved to be particularly devastating to the biodiversity of wetland habitats, where is establishes vast monotypic stands of vegetation. Recently, the leaf beetles, *Galerucella calmariensis* and *Galerucella pusilla*, and the flower-bud weevil *Nanophyes marmoratus*, have also been added to the list of biocontrol agents for use against Purple-loosestrife in America.

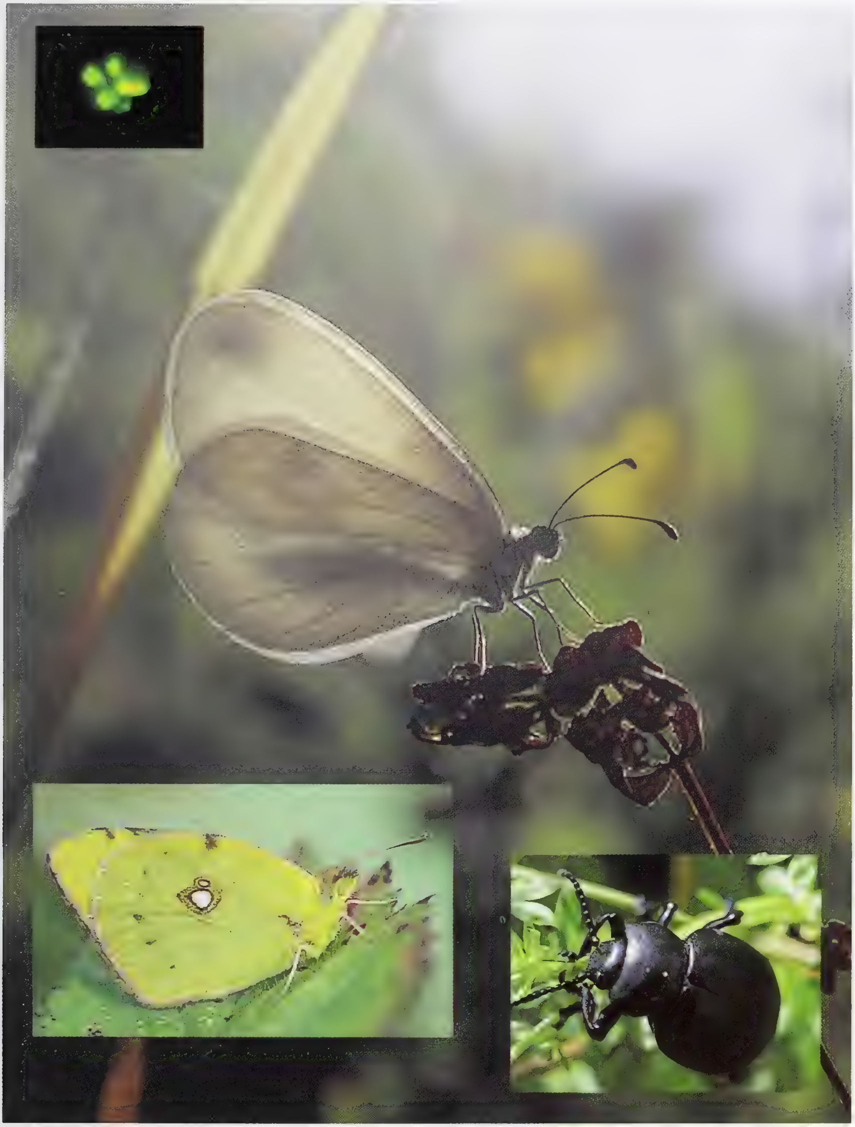

Plate 1: Undercliff fauna. Main picture: a second brood female Wood White *Leptidea sinapsis* basking in the heat of an August afternoon, silhouetted against a backdrop of lush undercliff vegetation and a shimmering sea. Clockwise from top left: the tiny luminous beacons of female Glow-worms *Lampyris noctiluca* light the undercliff paths at dusk; the lumbering Bloody-nosed Beetle *Timarcha tenebricosa* is usually found wandering slowly over bare ground; the Clouded Yellow *Colia croceus* is a regular migrant which is commonly found in the company of Hummingbird Hawkmoths *Macroglossum stellatarum* feeding on undercliff flowers. Photos: Peter Sutton

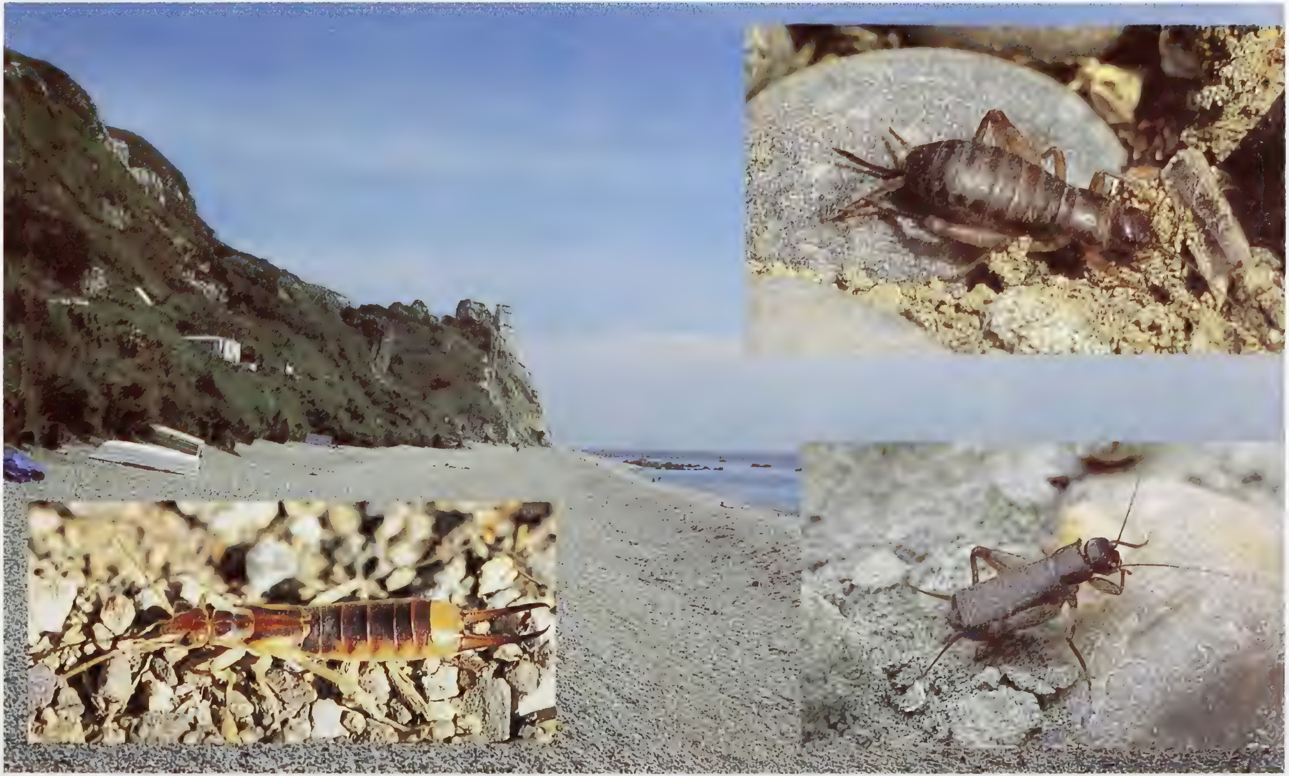

Plate 2: Shingle and soft rock cliff fauna. Main picture: Looking east along undercliff and shingle beach from Branscombe towards Beer Head. Clockwise from top right: female Scaly Cricket *Pseudomogoplistes vicentae*, an elusive RDB1 species thought to be confined to the eastern end of Chesil Beach on the British mainland, until a colony was discovered at Branscombe in 1998; male Scaly Cricket; the Giant or Tawny Earwig *Labidura riparia*, thought to be extinct in Britain since the 1930s, but a tantalising possible record from Branscombe was reported in the early 1980s.

Photos: Peter Sutton

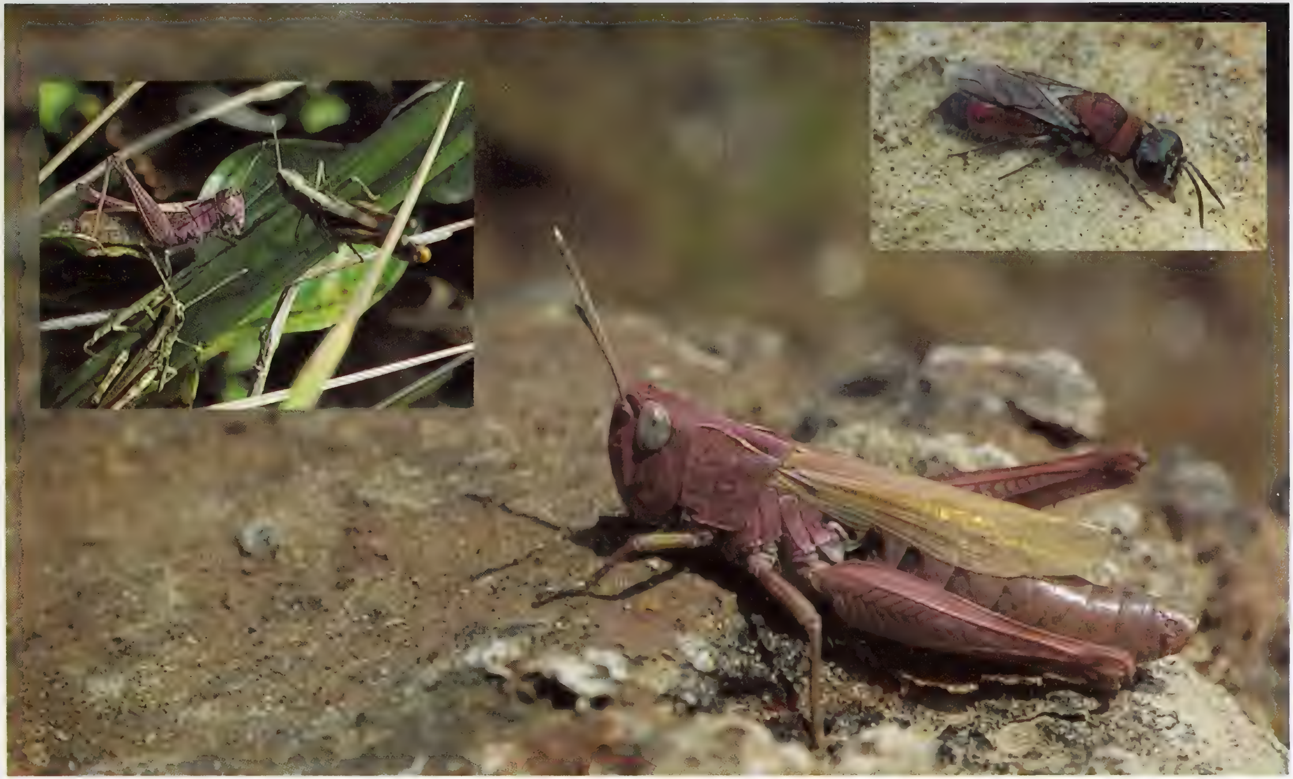

Plate 3: A splash of colour. Main picture: purple variety of the female Rufous Grasshopper *Gomphocerippus rufus*. This extremely rare colour form can be found without too much difficulty at Branscombe undercliff, suggesting that a climatic factor might be involved in the expression of this form. Inset left: purple female engaged in courtship display with rival males. Inset top right: The Ruby-tailed Wasp *Chrysis viridula*, a species which appears to have declined dramatically in recent years.

Photos: Peter Sutton

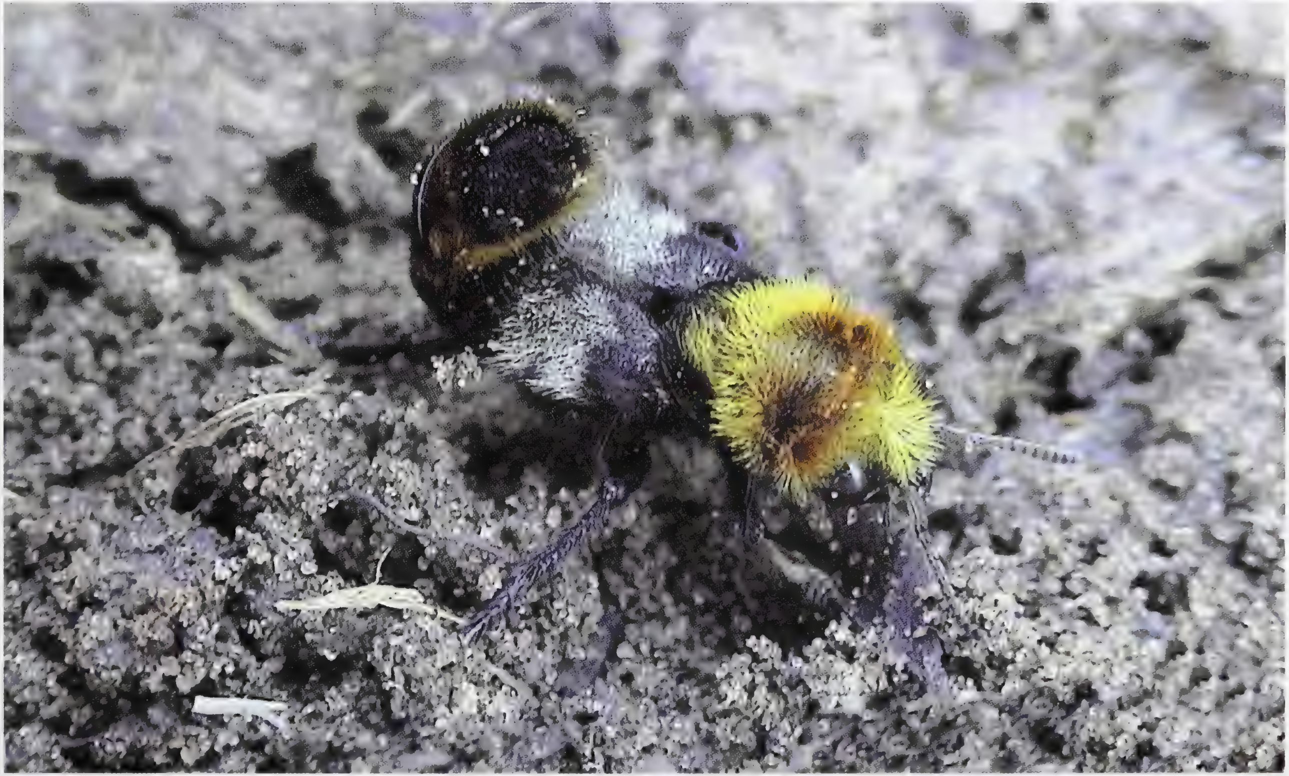

Plate 4: This specimen of the spectacular rove beetle (Coleoptera: Staphylinidae), the Maid of Kent *Emus hirtus* (RDB1), was discovered at RSPB Elmley Marshes in Kent by Mark Telfer and Graeme Lyons on 6th August 2003, which was the hottest day of the year to date. The lively specimen was photographed by John Walters, and subsequently returned to the site.

Could *Sitona gemellatus* be rediscovered at Branscombe?

Sitona gemellatus is another endangered (RDB1) weevil that could possibly be discovered on the landslips at Branscombe. Like the Cliff Tiger Beetle, it is entirely restricted to soft-rock cliff habitats in Britain where it is associated with the leguminous plants, Restharrow *Ononis repens* and Black Medick *Medicago lupulina*. This species, which was first discovered at Sidmouth in 1908, has recently been recorded only from a single site in Dorset (Shirt, 1987; Hyman and Parsons, 1992) where there is an apparently thriving colony. Recent confirmation of its presence in Caenarvonshire in Wales (Howe, *loc. cit.*) bodes well for its possible rediscovery as a breeding species in its original stronghold, the Sidmouth-Branscombe region of South-east Devon.

Hymenoptera (Bees, wasps and ants)

The Branscombe region is probably best known for its extensive hymenopteran fauna, which includes some considerable rarities, and new discoveries continue to be made in this area. The discovery of *Stelis phaeoptera* is described below, but a new species to Britain *Colletes hederae* (which first appeared in the Channel Islands; Edwards and Telfer, 2001), was recorded by Andy Foster at Branscombe recently.

Other species present include the large attractive mining bee *Andrena hattorfiana* (RDB3), which can often be easily recognised by the colour of its pollen sacs. This species is strongly associated with Field Scabious *Knautia arvensis* and its pollen is a distinctive salmon-pink colour (George Else; pers. comm., 2003).

The digger wasp, *Lestiphorus (Gorytes) bicinctus* (Nationally scarce b), is present on the East Cliff and is thought to prey on planthoppers. *Aporus unicolor* is a spider-hunting wasp which preys on the extraordinary Purse-web Spider *Atypus affinis*. It paralyses the spider within its burrow and the wasp larva feeds on the spider's body.

The aculeate Hymenoptera to be found in the Branscombe region include:

Chrysididae - Jewel wasps
Pseudomalus auratus, Chrysis viridula (Plate 3)

Tiphiidae
Myrmosa atra

Formicidae - Ants
Myrmica specioides (RDB3), *Leptothorax albipennis* (Nationally scarce a), *Myrmica sabuleti, Myrmica sabuleti, Formica cunicularia* (Southern

Restricted). *Formica fusca, Lasius alienus s.l., Lasius flavus, Lasius niger s.l.*

Pompilidae - Spider-hunting wasps
Cryptocheilus notatus (RDB3), *Aporus unicolor* (Nationally scarce A), *Priocnemis agilis.* (Nationally Scarce b), *Priocnemis exaltata, Agenioideus cinctellus, Arachnospila anceps, Arachnospila trivialis, Episyron rufipes*

Eumenidae
Odynerus spinipes

Vespidae - Social wasps
Dolichovespula sylvestris, Common Wasp *Vespula vulgaris,* Hornet *Vespa crabro*

Sphecidae
Nysson trimaculatus (Nationally scarce b), *Lestiphorus (Gorytes) bicinctus* (Nationally scarce b), Red Banded Sand Wasp *Ammophila sabulosa, Tachysphex pompiliformis, Trypoxylon attenuatum, Crossocerus elongatulus, Crossocerus podagricus, Crossocerus quadrimaculatus, Entomognathus brevis, Oxybelus uniglumis, Pemphredon inornata, Diodontus minutus, Diodontus tristis, Mellinus arvensis, Cerceris rybyensis*

Colletidae
Colletes hederae (pRDB 3, Only recognised on the mainland of the UK in 2000. Known on the Channel Islands for much longer. Very commonly found visiting Ivy, but only in coastal localities.) *Colletes daviesanus, Hylaeus communis, Hylaeus hyalinatus*

Andrenidae
Andrena rosae (RDB2), *Andrena simillima* (RDB2), *Andrena hattorfiana* (RDB3), *Andrena labiata* (Nationally Scarce a) *Andrena barbilabris, Andrena bicolor, Andrena dorsata, Andrena flavipes, Andrena minutula, Andrena ovatula, Andrena pilipes s.l, Andrena semilaevis, Andrena thoracica*

Halictidae
Sphecodes reticulatus (Nationally scarce a), *Halictus tumulorum, Lasioglossum albipes, Lasioglossum calceatum, Lasioglossum fulvicorne, Lasioglossum leucozonium, Lasioglossum leucopum, Lasioglossum morio, Lasioglossum nitidiusculum, Lasioglossum smeathmanellum, Lasioglossum villosulum, Sphecodes gibbus, Sphecodes monilicornis, Sphecodes ephippius, Sphecodes geoffrellus, Sphecodes puncticeps*

Mellitidae
Melitta tricincta (Nationally Scarce b)

Megachilidae
Stelis phaeoptera (p RDB1), Gold-fringed Mason Bee *Osmia aurulenta* (Nationally scarce b), *Hoplitis spinulosa, Megachile maritima, Megachile versicolor, Megachile willughbiella, Coelioxys rufescens*

Anthophoridae
Nomada fucata (Nationally Scarce a), *Nomada flavopicta,* (Nationally Scarce b), *Nomada fabriciana, Nomada flavoguttata, Nomada goodeniana*

Apidae
Bombus hortorum, Bombus lapidarius, Bombus lucorum, Bombus pascuorum, Bombus pratorum, Bombus terrestris, Bombus barbutellus, Bombus campestris, Bombus vestalis

The discovery of *Stelis phaeoptera* (p RDB1) at Branscombe

Stelis phaeoptera is a cleptoparasitic bee, which has become increasingly rare in recent times, and very few records have been received for this species since 1970. Falk (1991) discusses a number of possible reasons for the observed decline, but Edwards (1998) concludes that the reason for the decline of this species (and a number of other aculeates) is still unknown. At Branscombe there are several species of megachilinine bees, which are possible hosts for this species. *Stelis phaeoptera* was discovered at Branscombe for the first time by George Else in the early 1990's.

The jewel wasp *Chrysis viridula*, a species in decline?

Like *Stelis phaeoptera*, the jewel wasp, *Chrysis viridula* (Plate 3), appears to have declined considerably over the last few decades (Figure 12). This species is not included in

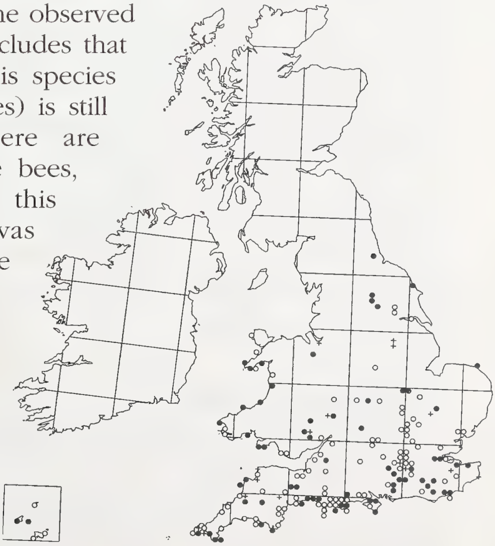

Figure 12. The UK distribution of the jewel wasp *Chrysis viridula* showing the recent apparent decline of this species.

Shirt (1987) or Falk (1991) and Edwards (1998) suggests that in the light of this apparent decline, its status should be reviewed. The specimen in Plate 3 was observed in the plentiful company of its host species, the eumenid wasp *Odyneris spinipes*, which was nesting in the sun-baked clay banks of the undercliff. (This latter species preys on curculionid weevils of the genus *Hypera*.)

Diptera (True Flies)

The undercliff seepages at Branscombe host two rare (RDB3) species of cranefly, *Limonia (Dicranomyia) goritiensis*, and *Orimarga virgo* (although there are no recent records for this latter species.)

A number of scarce soldier flies have been recorded from the Branscombe region, and these include: *Oxycera nigricornis*, *Oxycera trilineata*, *Oxycera pygmaea*, *Vanoyia tenuicornis*, and the large and quite spectacular soldier fly, *Stratiomys potamida* (which has been recorded in great numbers at Branscombe in some years.)

The bee fly, *Bombylius discolor*, which inhabits deciduous woods has not been seen since the 1970's, but could still be found on the wooded parts of the undercliff. Its larvae are brood parasites of the solitary bees which are abundant on the soft-rock cliffs. With such an extensive hymenopteran fauna at Branscombe, it is not surprising that many associated parasitic species can be found, and among the scarcer species are included the conopids, *Thecophora atra*, (a probable parasite of *Halictus* bees) and *Sicus ferrugineus*, a parasitic fly whose larvae reside in the nests of various bumblebees.

Among the rarer species of hoverfly are included: *Eumerus sabulonum*, *Orthonevra brevicornis* and *Cheilosia bergenstammi*.

Species of interest recorded from other families include: the stiletto fly *Thereva strigata* (RDB3) and the dolichopodid flies *Tachytrechus notatus* and *Syntormon zelleri*.

Trichoptera (Caddis flies)

Caddis flies, as described by Ian Wallace in his award-winning article, *The Beginner's Guide to Caddis* (*Bulletin* No. 446; Wallace, 2003) are a fascinating group of insects. The species to be found in the Branscombe region, which includes three Red Data Book species, are particularly interesting on account of their very strict habitat requirements. The Red Data book species all require small permanent streams and trickles of water that are so hard in nature that they deposit calcium carbonate.

Species found in the Branscombe region are: *Tinodes maclachlani* (which is found at seepage sites but does not appear to have any special water-type requirements); *Plectrocnemia brevis* RDB3; *Ernodes articularis* (RDB3); and *Adicella filicornis* (RDB3).

Hemiptera (Bugs)

The general picture provided by Kirby (1992) is that chalk cliffs along the south coast hold very good assemblages of the Hemiptera, whereas rapidly eroding soft-rock cliffs, by contrast, are poorly represented by this group. There is, however, one species, a nationally scarce (a) predatory shorebug, which is confined to soft-rock cliffs, and this species has been found on the undercliff at Branscombe.

As an example of the exacting habitat requirements of this, and other species which are associated with cliff seepage sites, Kirby (2001) states that "The Shorebug *Saldula arenicola* is, in south-west Britain, confined to the margins of young trickles on soft-rock cliffs. When the trickle becomes better established, *S. arenicola* is usually replaced by the common generalist, *Saldula saltatoria*."

Branscombe and the Sidmouth-Beer coast, in conclusion

It is clear that the Branscombe region in South-east Devon has been a very special area for visiting entomologists since Victorian times. This enchanting stretch of coastline has long been a source of many important records, from Mr Ashe's first British record of the rare weevil, *Hylobius transversovittatus*, to Mr Else's recent and welcome discovery of the increasingly threatened cuckoo bee, *Stelis phaeoptera*. It is difficult to imagine anywhere else in the British Isles where such an extraordinary assemblage of species' exists. If an entomologist set out to discover the Wood White, the Scaly Cricket, the Cliff Tiger Beetle and the Rufous Grasshopper, he may spend his time searching the woodlands of Surrey, the shingle of Chesil Beach, the soft rock undercliffs of the Isle of Wight, and the limestone grasslands of the Cotswolds, and yet it is possible to find all of these species virtually side by side at Branscombe! The Branscombe region represents a small piece of paradise for the visiting entomologist. Long may it continue.

Acknowledgements

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Moths to the Flame

by Jan Koryszko (6089)

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One evening during the summer of 2002, I was visiting friends. After dinner the conversation came round to moths. Kathleen, the lady of the house, runs an arts and craft shop. She buys goods for her shop, but she also makes a lot of her own things to save money for the business. She tells me that perfumed and scented candles are big sellers. She makes a lot of her own candles. She uses ordinary standard candles, then sprays them with perfume, which is left to dry. Other ingredients can also be used. She tests all her new aromas.

She said that moths enter the house on warm summer evening. The strong aroma attracts them into the house. Sometimes the moths almost touch the candle flames. Lavender and honeysuckle are the moths' favourite aromas. Other aromas are planned. Experiments with these scents may be useful for the moth hunter. Pear drops or evening primrose would be a good start.

Collecting the Hornet Moth *Sesia apiformis* (Clerck 1759)

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The usual advice given to entomologists who want to see the adults of this fascinating species is to search the trunks of poplar trees during June and July mornings but the cocoons can be collected during the winter months ,giving, perhaps, a greater chance of success.

On the 7th of December 2003 I visited a local gravel pit to search for the cocoons of some Puss Moth (*Cerura vinula*) larvae that I had seen feeding on poplars here in the summer. Finding the empty cocoons is easy – the full ones are a challenge! I was not successful but I had brought along a small gardening trowel as backup, so I paid my annual homage to Parson Greene and dug around the roots for the pupae of other species. Several old cases of the Poplar Hawk (*Laothoe populi*) were soon discovered but no living pupae.

Eventually I found a flimsy cocoon about three inches down in the sandy soil; it was touching but not actually attached to one of the tree's roots. The cocoon clearly incorporated chewed wood and I was able to tear a small hole in it, revealing a sizeable yellowish-white caterpillar with a shiny red-brown head – clearly not a beetle larva. A close look at the root, which was about 7cm in diameter, revealed a tunnel, possibly the one that this larva had produced. I cleared more soil away from the root and immediately found another cocoon. This one was quite securely attached to the wood and I needed my penknife to free it.

No more cocoons were found on the root, so I widened my search, still hoping for other species. Digging at least eighteen inches away from the tree, I located another Hornet Moth cocoon, identical to the first two. One puzzle was immediately clear – how did this one manage to include the chewed wood? It could conceivably have been moved away from the tree by a mischievous rabbit but there was no sign of recent disturbance. That this was not a fluke was shown half an hour later when I discovered a fourth cocoon lying loose in the soil about a foot away from another poplar tree. Perhaps the pupating larvae disgorges its last meal as it forms the cocoon.

At present the cocoons are in a good-sized container full of the sandy soil, lying just below the surface. They receive an occasional light spray to maintain the dampness and will hopefully emerge in due course. Naturally, any moths not required as specimens should be returned as quickly as possible to an area of suitable habitat, preferably one that is known to hold the species.

A search through my bookshelves revealed some interesting differences of opinion on the matter of the Hornet Moth's pupation strategy. Taking them in the order of publication, J.W. Tutt in his *Practical Hints for the Field Entomologist* mentions finding "the empty pupa cases sticking out of the trunk" beside the freshly emerged moths. That some individuals pupate in this way is certain for I have found these cases and it is not unusual to see the empty cocoons lodged inside emergence holes several inches above the ground. Later Tutt says that the larva "comes to the outside again" and the cocoon is spun "near the exit" which is somewhat ambiguous! And later still, in the third volume, he repeats the above but adds "and sometimes in the soil near the tree" so he gets there in the end.

The AES leaflet No.18 *Collecting Clearwings*, 1946, mentions only the pupation in the trunk. So too does B.R. Baker in *The Moths and Butterflies of Great Britain and Ireland, Volume 2*; to find the cocoons, he suggests "carefully rasping away the bark" of infected trees. In the *Colour Identification Guide to the Moths of the British Isles* Bernard Skinner does not mention the pupation site of the Hornet Moth specifically but in the general introduction to the group he states that pupation of the wood-feeding species takes place inside the trunk and that the empty cases can be found there after emergence. Finally, in *The Colour Identification Guide to Caterpillars of the British Isles* Jim Porter suggests one should "carefully remove loose bark near the base of the trunk and sift through the nearby soil to find the fully grown larvae".

Interestingly, the Goat Moth, *Cossus cossus,* another species feeding inside trees, has a similar, two-pronged approach to pupation. Whilst many of the larvae are found wandering away from the host trees in late summer, others will form the over-wintering cocoon in the timber itself. In Tutt, a Mr Quail reports finding them under bark and also inside stumps "if the wood is at all rotten". I once found an emerged pupal case of this species lodged in the cocoon which had been formed in the bark of an old pollarded willow at a height of at least four feet from the ground.

Having some variety in its habits at this most vulnerable stage of its life must give any species a slight advantage in the battle for survival.

Having some variety in its habits at this most vulnerable stage of its life must give any species a slight advantage in the battle for survival.

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* * *

When are gnats not gnats? When they are small black wasps!

by David Keen (3309L)

The evening of 12th July 2003 was a really beautiful one here in Banbury, north Oxfordshire. My wife, Wendy, and I were happily enjoying the peace and quiet of our garden after a hard day's work when a swarm of gnats became a real pain. The swarm was hovering about five feet above the lawn and kept drifting towards us. No amount of swishing at the insects by hand or book made any difference.

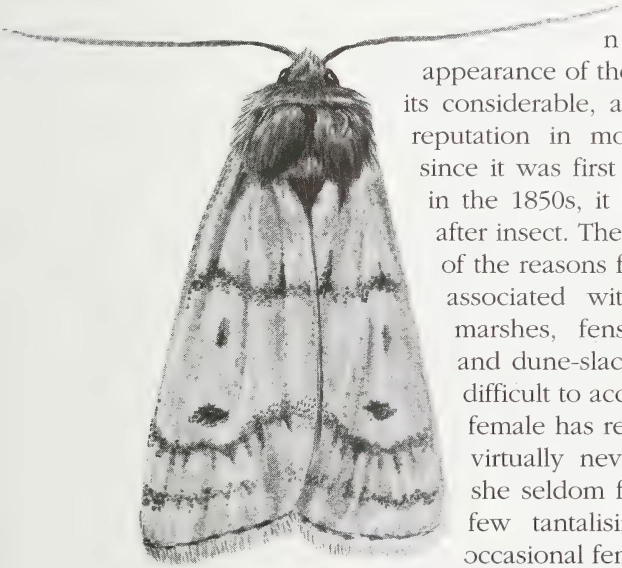
In desperation I decided that the only thing to do was to catch them in the butterfly net and despatch them to the land of nod. This had the desired affect but I could not help but have a closer look at some of the dead "gnats". They did not look like flies and surely they had too many wings. So I looked at them more closely under a lens - and found that they were actually very small black wasps.

I have to admit that this is the first time that I have ever bothered to examine a swarm of gnats, having always assumed that they were made up of Diptera and not Hymenoptera. Just shows how wrong you can be.

The Marsh Moth in decline – light-trappers needed

by Paul Waring 4220

Windmill View, 1366 Lincoln Road, Werrington, Peterborough, PE4 6LS.



The somewhat non-descript appearance of the Marsh Moth belies its considerable, almost mythological, reputation in mothing circles. Ever since it was first reported in Britain, in the 1850s, it has been a sought-after insect. The following are some of the reasons for its charisma. It is associated with the margins of marshes, fens, damp meadows and dune-slacks, which are often difficult to access and search. The female has reduced wings and is virtually never found. Probably she seldom flies, yet there are a few tantalising reports of the occasional female on the wing by day. The caterpillar is best found by sifting through piles of cut grass and other vegetation. Piles are specially constructed for this purpose, a technique developed in the 1930s and 1940s, the exact details of which have been passed down to a select few today. At any one time in its history, the Marsh Moth has been known from only a handful of sites at most, but these are scattered from Hampshire to Cumbria. Many people have travelled great distances in the hope of seeing this moth. Some have been lucky. For decades the fens of Huntingdonshire and Cambridgeshire proved the most productive places to visit. In the late nineteenth century interest centred on Wicken and Chippenham Fens in Cambridgeshire, but from the 1940s to the mid 1960s Woodwalton Fen in Huntingdonshire became the place to see this moth and its caterpillar. However, despite many searches, the Marsh Moth has not been found at Woodwalton Fen since exceptional flooding of the site in 1968.

In 1970 the Marsh Moth was rediscovered in Lincolnshire, where the only previous record was of a lone male on 21 June 1902. The site, which is now the Saltfleetby-Theddlethorpe Dunes NNR, supports the only population of Marsh Moth currently known in Britain. The moth has been monitored here since the 1970s and for the last four years I have been co-ordinating work on the species on behalf of Butterfly Conservation's *Action for Threatened Moths Project*, thanks to financial support from English Nature. All three of the other Lincolnshire sites with previous records of the moth have been surveyed for adults and larvae as part of the project but Saltfleetby-Theddlethorpe is the only one where the moth has been found since 2000. Counts of adults from 2000 to 2003 were just one individual (in one night of trapping), thirteen (three nights), two (one night) and three (one night) respectively. Despite extensive survey using the litter-pile technique, only a single larva has been recorded since 2000. This is worrying. In 1990 a litter-pile survey by Bernard Skinner, Colin Penney, David Wilson, Roy McCormick and I produced about one hundred larvae and a similar number was seen in 1989. Gerry Haggett recorded 55 larvae in 1996 and 61 in 1997 but only 15 in 1999 and just two in 2000. The reasons for this apparent decline are not clear. Flooding and changes in hydrology are possibilities and it is interesting to note that the breeding site was flooded over the winter of 2000.

In 2004 I will again be co-ordinating the project and would like to have light-traps operated very much more extensively on the Saltfleetby-Theddlethorpe Dunes NNR in late May-early June when the moth is flying. The aim is to gain a better understanding of the distribution of the moth on the site and to monitor any colonisation of some adjacent farmland which English Nature is restoring to a condition which may be suitable for the moth. If you have portable light-trapping equipment and would like to assist with this project, please contact me by e-mail: or write to me at the address given above. There may also be opportunities to be involved with larval survey later in the year (September-October).

* * *

A thirty-year hunt ends!

by Clive Betts (4976)

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By the time I was ten years old, my interest in natural history had focused on beetles. I used to spend every summer hunting for the more spectacular species around my home in SE London and on our holidays to South Devon. Although I found many remarkable species, my one true desire was to find an oil beetle (family Meloidae).

Everything about oil beetles drew me to them, from their amazing life-style to their unique appearance. I hunted especially hard on my holidays in Devon, and have continued ever since. I found many amazing insects, but I never saw a single oil beetle in over thirty years of entomology.

Oil beetles lay their eggs in burrows adjacent to the nests of solitary bees, their larvae congregating on flower-heads frequented by their host bees. Numbers of larvae may be carried back to the host's nest where the larvae consume the bee's own eggs and also, once more mature, the pollen provided for the bee's own larvae too. There are five UK species of oil beetle all of which have suffered a serious decline in recent years. If I hadn't managed to find them when they were more common I thought it unlikely I was going to randomly come across an oil beetle now they were so much scarcer.

On May 22nd 2003 I had taken my three young children on a walk among the spectacular scenery by Fingle Bridge on the edge of Dartmoor. Here the River Teign carves its way past Castle Drogo and through a deep gorge before heading out over Canonteign falls and on towards the Teign estuary on the South Eastern coast of Devon. We had been walking along the river's edge, more of a deep stream at this point, when my youngest son called to me. Well-trained, he had spotted a big black beetle on some moss and was watching it lumber around. Reaching down I saw instantly it was huge specimen of *Meloe violaceus*. I was elated, a reaction that my kids were used to but even they were a little taken aback by the level of enthusiasm at such a strange looking insect. I thought it an unlikely spot for an adult oil beetle so close to the river. I had a look around, however, and the compacted sandy ground around the riverbank would make a good home to a number of solitary bees like the mining bee *Andrena*, which is recorded as a host for *Meloe* species. I have since been told that this species can be regularly found around this area of Dartmoor in Spring. I hope I see more of them before another 30 years are up!

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Insects in the Taman Negara, Malaysia

by Stuart Cole (10159)

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The Taman Negara, which simply means 'the National Park' in Malay, is the largest area of protected lowland tropical rainforest in Peninsular Malaysia. Situated in the interior of the eastern side of the peninsular, the terrain of the national park varies from generally flat lowlands, dissected by numerous rivers and streams, to low mountains that reach an altitude of 7,174 feet at Gunung Tahan, the highest elevation in the Peninsular.

I visited in the reserve twice; the first time in March 1986, then again, much more recently, in July 2000. During my 13 day stay in 1986, rainfall was increasing after the comparatively dry month of February and rain sometimes fell almost continuously for days and nights at a time. Rainfall averages 89 inches a year at low elevations to 155 inches on Gunung Tahan. The 6 days spent here in July 2000 were generally drier and sunnier and the humidity was less trying.

Since 1986 the Malaysian government has pursued a policy of turning the park's HQ and lodging area at Kuala Tahan into a privatised 'luxury jungle resort' catering mostly for people who have little or no interest in the area's natural history. The facilities for visitors to the park have changed from cheap and basic rooms with a canteen for food into expensive air-conditioned chalets served by a gourmet restaurant. However, this has hardly affected most of the 1,400 square miles of primary rainforest and access to the national park was still possible only by a 40 mile journey up the Tembeling River in a motorised wooden boat.

As in any other tropical rainforest there is a huge diversity of plant and animal species in the national park. In this moisture-laden heat even the surfaces of the individual leaves of trees and shrubs develop their own very varied community of miniature algae, mosses, liverworts and lichens (called epiphylls). However, as in other rainforests, the animals are mostly disappointingly hard to see. The variety and volume of sounds all around give some indication of what's about: the whooping of the Siamang and Lar Gibbons, the manic laughter of the Helmeted Hornbill, the far carrying call of the Great Argus Pheasant, the croaking of giant geckoes from tree trunks, a cacophony of frog calls at marshy pools, the extraordinary volume of noise from cicadas and, in quieter moments, one can even hear parties of big termites as they chew the fallen twigs on the ground.

Because cicadas were present in a multitude of kinds, it seemed that each species had an allotted time of the day for the males to call. The noise of cicadas was continuous throughout the day until just after dark with the sounds changing as one kind ceased calling and another took the stage. There was some degree of overlap, when individuals of two species were heard at the same time for a while. The calls of some species built up to a crescendo, often at an ear-splitting volume. Two species ended their call with an unusual series of warbling notes, more like those of a bird, another's call resembled a high pitched electric drill while one kind made a sound that was quite indescribable. As this is a national park, I did no collecting so was not able identify many of the insects, but one kind of cicada was unmistakable. That was *Pomponia imperatoria*, the world's largest Homopteran, three inches in length and a wingspan of eight inches. This species, and other cicadas, came to lights every night and were especially numerous after a day or two of prolonged rain. The bigger species battered themselves against the neon bulbs with fearful violence until stunned into quiescence for a while before recovering and starting up again. Many eventually exhausted themselves and were soon found by ants that pulled them to pieces. Those cicadas that lasted the night resting on lamp posts, survived only to be snapped up in the morning by Southern Pied Hornbills, Malkohas and other birds.

There were other insects at light, especially small beetles: tiny bark beetles (Scolytinae), erotylids (including *Aulacochilus doriae*) and little chafers. The few larger beetles included *Xylotrupes gideon* of the Dynastinae. *X. gideon* is a polished black insect widely distributed from India to Australia and generally common. In the males the pronotum curves forward into a long bifurcated horn and there is another long bifurcated horn on the head. Other beetles were *Eucirrus meliyi*, a two inch long, beige-coloured chafer; another chafer of the genus *Polyphylla* (probably *P. fullo*, which occurs across Eurasia from dry Mediterranean woodland to humid south-east Asian forest); giant dung beetles of the genus *Heliocopris* and some very big longhorns. Moths at light included several kinds of hawkmoth, two rather small saturniids and, the only one that I could identify, *Lyssa zampa* (Uraniidae), which is a large brown species similar to a swallowtail butterfly in shape.

Except at light, termites and the social Hymenoptera were the only insects actually seen in any great number and variety. Although ants existed in profusion, most species could be overlooked in the dim light of the forest floor but the huge *Camponotus gigas* could not be missed. The slender black workers are an inch long and the 'soldier' caste are slightly longer still and of more robust build with a massive triangular head armed with short stout jaws. I once came upon the scene of a recent battle between *C. gigas* soldiers, presumably from different colonies. Quite a number of them were lying dead, locked together in pairs, each ant gripping the other so tightly that they must have died rather than relinquish their hold on the other. One night (in March 1986) swarms of winged *C. gigas* descended on the park buildings. Virtually all were males, but I came upon a couple huge females that had crawled into my room. By daylight few of the ants remained and by then they were dead or dying.

Among the other larger ants were species of *Polyrhachis*, a numerous genus found across the warmer parts of the Old World with around 640 species. Characteristically, *Polyrhachis* have a pair of large curved spines on the petiole and a couple of pairs of lesser spines on the mesosoma, but some species lack these spines. The most frequent species here was *P. ypsilon*, over half an inch long and clothed in short golden hair. Another of the more noticeable ants was an elongate, shiny black, ponerine of the pan-tropical genus *Leptogenys* that roamed along forest tracks in small compact raiding parties. *Meranoplus mucronatus*, a myrmecine of the tribe Meranoplini, was a curious looking ant found on rotten logs. The workers are squat, slow moving, dark red-brown insects. The large head is heavily sclerotised and the mesosoma is covered by a 4-cornered plate or shield with each corner extending into a sharp spine. *Meranoplus* is another widespread genus occurring from Africa to Australia.

Wasps were seen in many forms, the most diverse family being the spider-hunting Pompilidae. A huge species of scoliid wasp sometimes turned up in clearings, cruising low over the ground with a mechanical-sounding whirring of wings. Unfortunately these never settled so I was unable to get a good look at them but, from their size and the green glint of their wings, I think they could only have been females of *Megascolia procer*. With a length of nearly two and a half inches, I believe this is another record holder as the world's biggest Hymenopteran. Several other kinds of scoliid were also seen. The most numerous of the social wasps, and the only one I knew well enough to identify, was the large hornet *Vespa tropica* which is dark red-brown with an orange band across the abdomen. This species occurs right across southern Asia from Afghanistan to New Guinea and has a reputation for its ferocity and sting but I have never found it to be an aggressive insect.

I encountered social bees most frequently when climbing a low hill, Bukit Teresek, not far from Kuala Tahan. In this heat and high humidity one sweats with the least effort and when climbing Teresek one naturally sweats even more copiously. A walker stopping for the view at either of the two lookout points just short of the summit is assailed by hordes of bees, most of them little social bees of the Meliponinae, commonly called sweat bees or stingless bees. Since the track up the hill is popular with visitors to Kuala Tahan, the bees do not always have to wait for long. They land on every exposed part of the body and on sweat soaked clothing, they creep into ones hair and eyes and, such is their passion for salt, they will risk being squashed rather than be driven away and it is fortunate that they have no sting. Meliponines are small; those on the hill were between 3 mm and 5 mm long, according to species, of which there were several; black, brown or orange in colour. The sweat bees were joined by two kinds of honey bee and these were almost as persistent. One of these species I recognised as the orange and black Giant Honey Bee (*Apis dorsata*) that occurs across tropical and sub-tropical Asia, the other was a dark brown insect a good deal smaller. Very few solitary bees were noticed apart from the big black carpenter bees (*Xylocopa* sp.) that were common at flowers along the Tembeling River and around the park HQ.

The most conspicuous of the termites were of the genera *Macrotermes* and *Hospitalitermes*. *Macrotermes*, including the shiny black *M. carbonarius*, were active above ground at night and in daytime during overcast weather and were encountered in long processions marching along tracks or in smaller parties demolishing fallen twigs. Soldiers of one species of this African and Asian fungus-growing genus were the biggest termites that I have seen anywhere; about half an inch long with big polished heads armed with prominent mandibles.

Hospitalitermes is an unusual genus of termites living in the rainforests of south-east Asia and Sri Lanka. They collect lichen from the branches and trunks of trees and carry the material back to their nests. I often came upon their seemingly endless columns of workers, reminiscent of the driver ants of Africa and army ants of tropical America, marching rapidly down tree trunks, across the forest floor and along the branches of shrubs. The workers were all identical in size, about 5 or 6 mm in length, and travelled four to nine abreast in close formation flanked by smaller numbers of the nasute soldier caste. I once found a colony of *Hospitalitermes* massing at the base of a small tree. The termites were moving down the trunk of another tree, crossing a path and congregating in many thousands around the bole of the small tree which they had enveloped to a depth of two feet. A thin line of soldiers surrounded the mass of workers, standing alert with heads facing outwards. Not all the termites were stopping here though; through the middle of the great gathering, a stream two to three inches wide, of both workers and soldiers flowed on into the undergrowth where some stopped to form another mass on the leaf litter. About a third of all the workers were carrying a pellet of some indeterminate grey material, presumably lichen.

Not many beetles were ever found during a walk through the forest. It seemed to me that the Coleoptera, are, like the Lepidoptera, more diverse in the montane forests of Malaysia, where trees of such families as the Fagaceae, Lauraceae and Myrtaceae become more numerous, than in the lowland rainforests dominated by the Dipterocarpacae. Those beetles that I most often encountered in the Taman Negara were little chrysomelids of the Eumolpinae and tortoise beetles belonging to the tribes Aspidomorphini and Cassidini. Apart from two species of *Cicindela* that frequented the shore of the Tembeling River and another that hunted on forest paths, the only carabid seen was *Calleida splendidula* of the Lebiini that was common on the foliage of bushes beside the river (with the exception of the Cicindelinae, carabids are poorly represented in Malaysia). The genus *Calleida* is widely distributed in the warmer regions of both the Old and New Worlds, this species is buff in colour with shining green margins to the elytra. Another beetle on foliage was the very dark blue *Ischalia indigacea. Ischalia* is a small genus from East Asia and western North America. It and related genera have been moved around between the Pyrochroidae, Pythidae, Anthicidae or given their own family Ischaliidae. A beetle sometimes found in clearings was a meloid of the genus *Denierella.* This was a rather handsome insect, all matt black except for the shiny orange head.

Butterflies were neither numerous nor varied during either of my visits to Taman Negara and those seen were mostly in flight along rivers and streams. Of these I could identify only *Parantica aspasia*, one of the Danainae whose yellow wings have prominent black veins. In the forest interior, the most frequent species was a bright pale blue lycaenid that flitted low over paths. Another was *Thaumantis klugius* (Nymphalidae) whose dark wings spanning about two and a half inches glowed violet in the deep shade of the forest. When it landed on the leaf litter the insect disappeared from sight as it holds the wings upright so that only the cryptically coloured undersides were exposed. The only other species that I identified was *Paralaxita damajanta* of the lycaenid subfamily Riodininae.

I could not identify any of the spiders that I found except for one quite bizarre creature that I came across one night as she was completing the concentric strands of her orb web slung across a path. She was one of the genus *Arachnura* (Argiopidae), commonly called scorpion spiders, that is distributed from Japan south through eastern Asia to Australia. The spider was about two inches long, the tip of her abdomen was extended vertically into a long tapering appendage that was turned over at the tip like a scorpion's tail. Another of the stranger arachnids was a whip-scorpion of the order Uropygi with heavily armoured pedipalps ending in pincer-like claws and an abdomen with a long thin 'tail'. The latter segmented appendage, which gives the Uropygi their popular name, looks like an antenna at the wrong end of the body and what its purpose is I do not know. The function of antennae is provided by the elongated first pair of legs.

As for the mammals of this rain forest, very few showed themselves other than some of the 25 kinds of squirrel that occur in the Malaysian Peninsular. A particularly fine individual was a Black Giant Squirrel, an animal nearly three feet long, mostly black but with cream-coloured belly and throat, that had a habit of chewing chunks out of a wooden hide near Kuala Tahan. Undoubtedly, the highlight of those mammals that I did see was the tapir. The Taman Negara is, perhaps, the one place in the world where there is a very good chance of seeing the solitary, nocturnal, Malayan Tapir in the wild. I spent three nights in another hide (the Kumbang Hide) deep in the forest five miles from Kuala Tahan with the hope that one would emerge into a small clearing where there is a salt lick.

The trail to the hide runs alongside the tannin-stained waters of the Tahan River for a couple of miles then cuts across flat country with tall primary rainforest. Crickets, cockroaches and harvestmen (opiliones) were frequent on the track and skinks rustled in the leaf litter. The ant *Polyrhachis ypsilon* was particularly numerous along this track, crossing it on the fallen trees where little bright metallic green tiger beetles hunted. There was also the occasional grasshopper the most distinctive of which was *Systella rafflesi*, one of the small south-east Asian family Trigonopterygidae and a mimic of the dead leaves of the forest floor. The fore-wings of the insect curve up and back into a high crest over the abdomen and are blotched and marked like the brown leaves around it. The head tapers to a point from which the antennae point forwards to resemble the petiole of a leaf. Stick insects and mantids were rarely seen but one unusual mantid was found on a bush beside the river. It was about two and a half inches long, its body and limbs extremely attenuated, all less than the thickness of a cotton thread. It might have been taken for a phasmid were it not for the raptorial front legs.

One kind of animal was all too numerous along this and every other track. The leaf litter was infested with leeches, the more so in the wet weather of March 1986 than in July 2000 and the wetter the ground the more abundant they were. The species here are mostly, or possibly all, of the genus *Haemadipsa* of the Hirudidae. They lingered on the trails and looped rapidly towards me whenever I stopped to look at something, frequently slipping into my boots undetected. Sometimes the feeling of warm liquid in my boots alerted me to the presence of feeding leeches or, if they attacked a tender part of the foot, there would be a sharp pain and I would discover two or three shiny black, bloated leeches between my toes. Fortunately, despite their slippery skin, the leeches are not difficult to grasp and pull away, although the wound they make with their circular mouth bleeds profusely for up to an hour after.

Of larger animals very little was seen, sometimes a squirrel travelling through the branches, a big monitor lizard crashing out of the undergrowth or a Rhinoceros Hornbill, heard, then briefly seen through the foliage as it took to flight high above. After wading across the, usually, shallow Trenggan River, the Kumbang Hide is less than a mile away. It is set on stilts overlooking a small grassy glade containing a patch of marshy salt-rich ground. On my third visit to the hide, I arrived just after dark. The luminous fruiting bodies of fungi now shone like little lamps on rotting logs and stumps while the leaf litter in places glowed with a more subdued white light from fungal mycorhyza. Further light came from the fireflies (beetles of the lampyridae) drifting about the clearing. The barrage of sound from cicadas was joined by frogs calling from the marsh but soon the cicadas ceased and were replaced by the quieter rasping of crickets. Inside the hide, forest rats rummaged through the rucksacks of the three other visitors who had arrived before me. From time to time a big gecko emitted startlingly loud frog-like croaking from the wall and, as I lay on one of the dirty mattresses on the bunks, I felt the wingbeats of something, probably a bat, or perhaps a large moth, flitting over my face.

Eventually, around midnight a vague black and white shape emerged from the forest into the clearing as a tapir came out to drink at the pool. In the darkness of the clearing its large glossy black head, the long snout overhanging its mouth and small eyes glowing red in the light of my torch, gave the animal a decidedly primeval look. It disappeared after ten minutes to be replaced soon after by a Sambar stag. At dawn another tapir, or maybe the same one, appeared again for a few minutes while it took a long draught of water.

There had been a storm during the night and, on my return to Kuala Tahan, I discovered that the Trenggan River was twice as deep as it had been the evening before and flowing with some force. I forged the river with some difficulty, then encountered little along the way except for a rather beautiful snake, aptly called the Paradise Tree Snake; a last treat for my final walk along the Kumbang trail.

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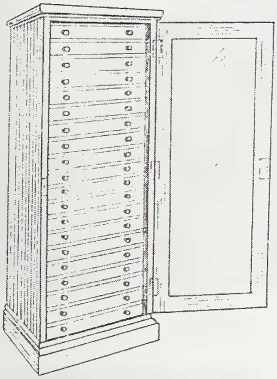

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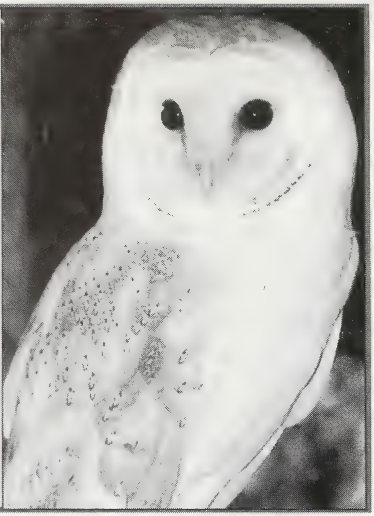

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AES AGM and Members' Day – 2004

Saturday, 24th April, 2004

at the Royal Entomological Society
41 Queen's Gate, London SW7 5HR

This year the AES Members' Day and AGM is being held at the Royal Entomological Society, Queen's Gate, London.

PROGRAMME

10.30 am	Doors open for members to sign in. Tea and coffee will be available. Coats may be left in an unsupervised cloakroom area at your own risk – the AES will no accept liability in the case of a problem occurring.
11.00 am	Welcoming address followed by first lecture by Peter Harvey: "Brownfield sites and the reasons they are important for invertebrates"
12 noon	The Annual General Meeting will take place. Nominations for the election to the Society's Council or as a serving officer of the Society should be forwarded to the Secretary along with the names of two nominators who should be members of the Society. The AGM will be followed by a break for lunch.
2.00 pm	The second lecture: "The Brown Jewels of London" will be given by Richard Jones.
3.00 pm	The third lecture: "Brownfield sites: A national perspective" will be given by Peter Kirby
4.00 pm	Final questions and discussion. Members' Day will end between 4.00-4.30 pm.

The RES is in close proximity to the Natural History Museum so you may combine your day with a visit to both the AGM and museum.

The RES have no restaurant but there are many restaurants and pubs, cafés and sandwich bars close by in Kensington (especially around South Kensington tube station).

Unfortunately there are no facilities to enable us to run separate events for Bug Club members but this is a great opportunity for them to visit the Natural History Museum!

Members will be able to view the various AES publications currently available and place an order.

AES AGM and Members' Day – 2004

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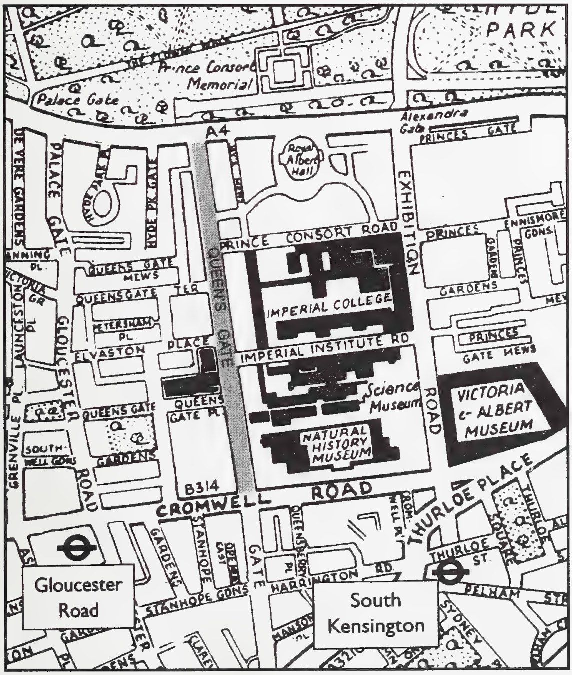

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The Bulletin

f the Amateur Entomologists' Society

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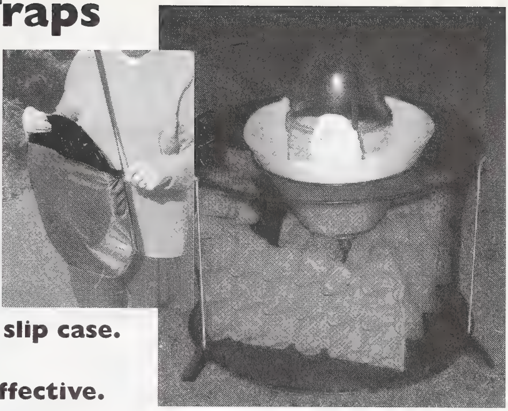

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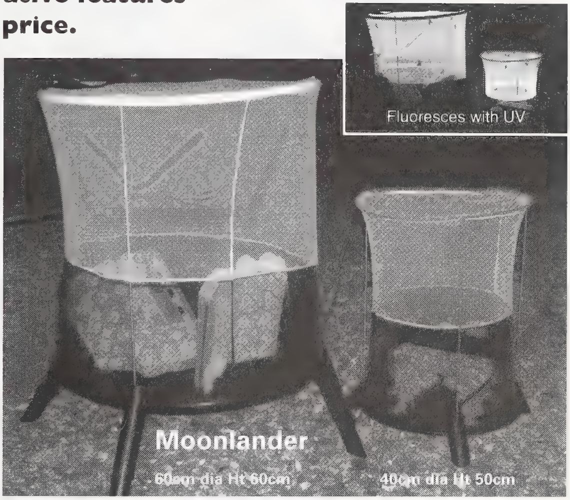

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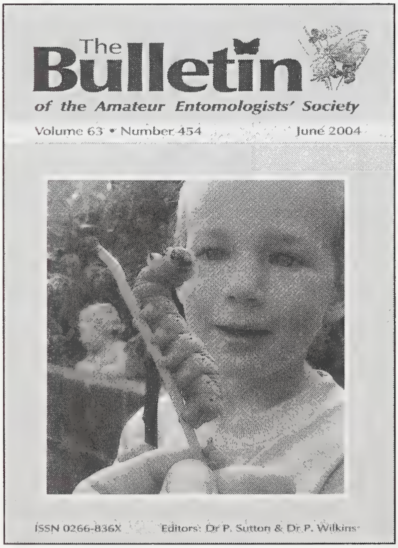
You can help us in a number of ways, for example: by joining the Bug Club yourself, getting someone else to join the Bug Club, promoting the Bug Club and AES to your local school/Scout or Guide Group etc, running a Bug Club event or writing an article for our exciting newsletter. If you can do anything to help then please write to us: **AES Bug Club, PO Box 8774, London, SW7 5ZG**. Membership details can be found in the front of this Bulletin.



The Bulletin of the Amateur Entomologists' Society

Volume 63 • Number 454 June 2004

ISSN 0266-836X Editors: Dr P. Sutton & Dr P. Wilkins

Photograph: John Walters

Bulletin Cover

There are few sights more impressive to the young enthusiast than that colourful colossus of the moth world, the Death's Head Hawkmoth caterpillar. The observation of such brightly painted and awe-inspiring creatures is bound to spark a desire for further exploration into the wonders of the natural world! This digital image was recorded by John Walters using a Sony PC120E camcorder.

The Bulletin
of the Amateur Entomologists' Society

Volume 63 • Number 454 June 2004

Editorial

I write this article having recently attended the Society's AGM. This was an excellent day with some superb speakers. The talks were focused around the importance of Brownfield sites for insects and were highly stimulating. Sadly, the Society were let down by our original venue. Hence the day had to be re-arranged at short notice. So the advertising for the event was not as good as we would have hoped. It was a little disheartening, however, to see so few members on the day. I am sure that those who were there will agree that everyone else missed an exceptional day! I would recommend that you look out for next year's AGM in April.

The day was finally held at the Royal Entomological Society and signals closer links between the RES and the AES. This is thanks to the hard work of the Society's Registrar, Nick Holford. More details will be available in the future.

I have taken the unusual step of moving the Exhibition reports to this issue. They have in the past appeared at several points throughout the year. I hope that, by including them relatively early in the season, I may stimulate members to be thinking of exhibits for this year's Annual Exhibition. This will be held as usual in Kempton Park on the first Saturday in October.

I will end this editorial with the customary calls for more articles. I have received favourable comments on virtually every article in the past couple of years, no matter how long or short. So don't be shy – members want to read your writings. Send anything you want considering to the PO Box or phil@bombus.freeserve.co.uk. Thanks!!

Phil Wilkins

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Treasurers Report

For year ending 31st December 2003

2003 saw the General Fund of the Society making a loss again, which I had expected, this time in the region of £6018, nearly £2000 less than the previous year. Since this was my second full year as treasurer of the society I took the opportunity to start to look in depth at our finances covering a period of some 13 years or more. It soon became apparent that the main reason for our losses related to the level of our subscriptions when compared with the cost of producing our journals, namely *The Bulletin*, *Invertebrate Conservation News* and the *Bug Club Magazine*. The Society has taken many steps to greatly improve these journals, such as the colour supplements, but the level of subscriptions has not kept up with the cost of these and seems to be the primary cause of our almost constant losses since 1990. As such it has clearly been necessary to increase the subscription levels as of 1st January 2004. The cost of producing these journals has been reduced following discussions with the printers who assisted us in obtaining lower costs without a reduction in quality. Both of these aspects will take effect fully in 2004 and it is hoped that our losses will be greatly reduced as a result. Consideration is underway as to what else can be done to return the General Fund to a better financial footing. Since 1990 monies from investments and other Funds, such as the Crow and Hammond Fund were used to offset the losses incurred by the general fund, but this could not continue indefinitely.

Investment levels have recovered somewhat, and so the Crow and Hammond fund, Ansorge Fund and Publications Fund have all returned to making a profit for the year, although £6000 has been transferred from the Crow and Hammond fund to the General Fund to offset the loss for 2003.

The Publications Fund made a profit during the year of £2490, and two publications were produced, namely a revised edition of the popular Phasmid booklet by Paul Brock and a new publication *Larval Foodplants of the Butterflies of Great Britain and Ireland.* Further new publications, mostly new editions of those where stocks are low, are at present underway.

April 2004.
Peter May
Hon. Treasurer

AES Exhibition 2003 – Exhibit reports

The following reports were received for the exhibits at the AES Exhibition for 2003.

A Live Specimen of the Deer Ked *Liptoptena cervi* (L.) (Diptera Hippoboscidae) collected on the 3rd October, 2003, at the Royal Horticultural Society Garden, Wisley, Surrey by Andrew Halstead (6346).

Some local insects collected in Suffolk and Norfolk in July 2003 – Andrew Halstead (6346)

The 2003 Dipterists' Forum summer meeting took place during 11-18th July and was based at Hengrave, near Bury St Edmunds, Suffolk. This gave access to a wide range of sites and habitats, ranging from breckland heaths to fens. Among the more interesting insects seen were:- Hemiptera: Membracidae – *Gargara genistae* (F.), swept from broom 17.7.03, Forest Lodge, The Kings Forest, near West Stow, Suff. Dermaptera: Forficulidae – a male macrolabic form of *Dermaptera auricularia* L., swept 16.7.03, Dale Pond, The Kings Forest, near West Stow, Suff. Coleoptera: Cerambycidae – *Agapanthia villosoviridescens* (Deg.), swept 11.7.03, Tuddenham Heath, near Tuddenham, Suff. *Leptura rubra* L., female taken in flight 12.7.03, Cranwich Heath, near Mundford, Suff., male swept 14.7.03, Chalk Lane, The Kings Forest, near Thetford, Suff. Coleoptera: Scarabaeidae – *Omaloplia ruricola* (F.), on chalk turf, Grimes Graves, near Weeting, Suff. Diptera: Tabanidae – female *Tabanus miki* Brauer, swept 13.7.03, Market Weston Fen, near Hopton, Suff. Diptera: Stratiomyidae – female *Oxycera leonina* (Panzer), swept near lake at Lynford Meadows, near Mundford, Suff. Male *Stratiomys potamida* (Mg.), on hogweed flower 13.7.03, Thelnetham Fen, near Blo Norton, Suff. Male and female *Odontomyia angulata* (Panzer), swept 15.7.03 by pingo pool, Thompson Common, near Thompson, Norf. Diptera: Syrphidae – female *Myolepta luteola* (Gmelin), on hogweed flower 18.7.03, Cavenham Heath, near Cavenham, Suff. Diptera: Tephritidae – female *Oxyna flavipennis* Loew, swept 12.7.03, Lynford Meadows, near Mundford, Suff.

Some British Moths – Colin Hart (3845)

Square-spotted Clay (*Xestia rhomboidea* Esper)

This moth was once widely distributed and fairly common over a wide area of the British Isles, but it has become quite rare in recent years. The British Entomological and Natural History Society is co-ordinating a survey of it in support of a Biological Action Plan (BAP) with the aim of discovering more about its biology and current distribution. Over the past two years a small increase in numbers has been seen. The moth occurs in Surrey and this specimen came to my garden MV trap near Reigate on 7th August. only the second specimen I have seen there in 22 years.

Rest Harrow (*Aplasta ononaria* Fuessly)
A single specimen of this coastal species came to an MV trap run by Will Attridge on 16th August in his garden near Ockley. Surrey. This moth is believed to be the first Surrey record of this species and is undoubtedly a migrant.

Small Mottled Willow (*Spodoptera exigua* Hubner)
In the same trap and on the same night Will also recorded two of these migrants from the Mediterranean. This specimen is very large and dark, it was kept because there was a possibility that it was the Dark Mottled Willow *(Spodoptera cilium* Guenee).

Cypress Carpet (*Thera cupressata* Geyer)
On 14th June the Devon Moth Group organised a night field meeting to monitor the status of the White Spot *(Hadena albimacula* Borkhausen) at Branscombe. This was a delightful evening and over 100 different species turned up including the White Spot and a single Cypress Carpet. This specimen is only the second record for Devon for this recent coloniser to the British Isles.

Cloaked Minor (*Mesoligia furuncula* D. & S.)?
On 12th August the Sussex Moth Group organised a field meeting with MV lights at Church Norton, near Selsey. The very hot weather at the turn of the month was almost over but it was still 21°C at midnight and we saw many thousands of moths, although most of them it must be said were Silver Ys *(Autographa gamma* Linnaeus). I've never seen this plain, orange form of Cloaked Minor before and I'm not certain of the identification. A typical specimen is shown for comparison.

Müllerian Mimicry in *Heliconius melpomone* and *H. erato* – Yealand Kalfayan (8627), Bristol, October 2003

Heliconius melpomone and ***Helconius erato*** are two closely related species that occur throughout most of tropical Central and South America. They exist in a bewildering variety of subspecies and forms. For instance, Holzinger and Holzinger describe 29 subspecies and 108 forms of *melpomone* and 29 subspecies and 84 forms of *erato*.

Is there any way of organising this chaos? Does simplification produce a pattern that helps us interpret what is taking place with these two species of butterfly?

Careful sifting of these myriad forms yields about a dozen substantially different patterns. Each one is broadly confined to a particular geographical areas. Each pattern is represented by a subspecies or form of *melpomone* and *erato*. Some, but not all, of these patterns are also represented by a subspecies or form of other Heliconiinae such as *Neruda aoede, Heliconius demeter, H. elevatus, H. burneyi* and *H. xanthocles.*

This display case showed such patterns. The similarity between the two species is often very close. For simplicity, I have not included any examples of *N. aode, H. demeter* etc.

The key to the most plausible explanation is to ask what happened to the amazon rainforest during the previous few thousand years. Using computer models of climate, researchers have concluded that the rainforest has gone through periods when it was far less extensive than during the last few hundred years. The South American continent became cooler and drier as a whole. At those times, the rainforest progressively shrank until it became a series of isolated pockets. Forest-dwelling species, including *melpomone* and *erato* were then able to evolve in isolation. Each pocket began to generate different patterns of butterfly wing colouration. Müllerian mimicry ensured that interdependent species (such as *melpomone* and *erato)* evolved together. Computer simulations suggest the presence of about a dozen such areas, corresponding to the present day distribution of the dozen patterns of *melpomone* and *erato*. Subsequent fusion of the rainforest and interbreeding of the different subspecies has helped generate the multiple forms existing today.

Anyone interested in reading more about this might like to consult the following references:

1. Holzinger & Holzinger. 1994. *Heliconius* and Related Genera. Sciences Nat, France
2. Lincoln P.Brower (Ed). 1988. Mimicry and the Evolutionary Process. University of Chicago Press.
3. Sheppard PM et al, 1985. Genetics and the evolution of Müllerian mimicry in *Heliconius* butterflies. Philos.Trans. R. Soc. Lond. B, Biol. Sci. 308:433-607
4. Turner JRG 1981. Adaptation and evolution in *Heliconius:* a defence of neoDarwinism. Annu.Rev. Ecol. Syst. 12:99-121

Interesting Insects From England And Iberia, 1965 - 2003 – David Keen (3309)

With plans to retire to Spain next year, this is likely to be the last time that I will set out an exhibit at the Annual Exhibition. Thus I thought that I would show some of the interesting insects that have come my way over the last 38 years.

With two exceptions, the specimens shown come from four locations:

My parents' garden in Thames Ditton. Surrey – where I lived from 1942 to 1966

My present garden in Drayton. Banbury. Oxfordshire – where I have lived since 1982

Sesmaris in the Portuguese Algarve – where I spent two two-week holidays in 1995 and 1996

My friend's garden in Mezquitilla which is a village on the outskirts of El Saucejo in the Province of Sevilla. Spain – where I have spent many holidays since 1997.

Starting with the left-hand row, we have a nymph and two adults of the startling Grasshopper. *Acridia unguiculata* Rambur. from Spain. Adults quickly fly away after the slightest disturbance and are difficult to follow against the background of dried vegetation during September afternoons.

Then we have the only specimen of the bulky Grasshopper, *Polysarcus denticaudata* Charpentier. that I have come across. It was found dead in the swimming pool in my friend's Spanish garden.

I had to include the next specimen which is one of two that I found under stones by the side of a road on the outskirts of the village of Benafin in the Algarve in 1996. It is the cricket, *Scobius lusitanicus* (Serv.). which has that extraordinary "flap" held out in front of its head. It appears to be a North African species that has become established in the south of Iberia but I have yet to locate it in Spain.

At the bottom of this row we have a specimen of the large and attractive Lacewing, *Italochrysa stigmatica.* taken in the Algarve. I actually found it as I was searching for the key to the door of the villa that my wife and I rented in May 1995 – luckily it stayed put until we had opened the door and unloaded our luggage from the hire car! According to an old friend of mine, the late Bert Hynd. this appears to be the first record of this species from the Algarve. I have yet to see a second specimen.

Moving on to the middle row, we find two Death's head Hawks – both found dead in my friend's swimming pool, one in 2001 and the other this year. Clearly they had done themselves no good in trying to escape from the water.

Then we have an adult, pupa and cocoon of the Giant Peacock Moth. *Saturnia pyri* Den. These were found by my friend in his Spanish garden, which includes a hillside that is the typical habitat for this species

At the bottom of this row we have three striking Robber-flies taken over the years in the two Iberian locations. These and a lot of smaller species are commonly met with throughout the summer months.

At the top of the right-hand row are two examples of the superb Cerambycid beetle, *Phoracantha seipunctaa* (Fabr.), found in swimming pools in the Algarve in 1995 and Spain in 2000. The larvae of this species live in Eucalyptus trees and is a native of Australia. When these trees were planted in the south of Iberia in the last century, the beetle came too.

Bee-flies of various shapes and sizes abound in the south of Iberia. Here are a few examples that I have taken between 1995 and 2002.

As it is often very hot in Spain, with blue skies from morning to night, I have found that Dragonflies retain their colours very well if they are killed, set and immediately left to dry in the sun. I hope that there is sufficient light in the hall to enable members to see that even the pale powder blue of this specimen has been preserved in this way.

To the right of the Dragonfly is a spectacular fly from the Family *Sarcophagidae*. This one was caught in Spain and has three large and three small spots on its yellow-coloured abdomen.

I have written an article about the bug, *Troilus luridus* (Fabr.), which I hope will appear in the *Bulletin* before too long. Briefly, the final instar nymph attacked the moth pupa and carried it around on the end of its rostrum for three days. By which time it had sucked out sufficient liquid from the pupa to kill it. The adult bug reared from the nymph is shown above the dead moth pupa and the nymphal skin.

To the right there are pupae and an adult of the Lily Beetle, *Lilioceris lilii* (Scop.), reared from larvae found in my Banbury garden in July this year.

Below that are a number of "gnats" taken from a swarm of these insects in my garden on 12th July this year. If you look closely, however, you will see that these are not gnats at all, but small black wasps. More about these will appear in a forth-coming article in the *Bulletin.*

Then we have two specimens of the black and yellow Sand-wasp. *Sceliphron spirifex,* which emerged from a nest removed from the wall of my friend's villa in Spain. Along with several specimens of the wasp, two much smaller wasp parasites also emerged from the nest and these are shown as well.

At the bottom of the row, there are two Butterflies. The dwarf specimen of the Brimstone. *Gonoptervx rhamni* (Linn.), was taken on the North Downs at Headley Heath, near Leatherhead in Surrey on 14th August 1965. Next to that is an example of the Small Tortoiseshell, *Aglais urticae* Linn., var. *ichnusoides* Selys taken in the garden at Thames Ditton on 28th. March 1965.

Coleoptera from the Royal Botanic Gardens Kew Richmond Surrey (Status code V) – Exhibit by Keith C. Lewis (3680)

Coleoptera surveys of the Wild Garden at Kew were conducted during 1998-1999 with the kind permission of the then Director of Kew, and Mark Bridger who was at that time in charge of the south arboretum.

I subsequently made many visits to "The Wild Area" to which the general public have no access. The site is situated behind and not far from the Queens Cottage, one side of the ground being adjacent to Richmond golf course and the other angle of the site bounded by the river Thames. There is a small shallow pond surrounded by reeds while a good selection of native and foreign trees can be found. There are areas where the grass is kept fairly short (wide paths) and others where grasses and mixed vegetation are left to grow naturally. Also there are a number of dead trees and logs that have been left in situ to encourage insect life. (Pitfall traps were used.)

For a full list of the Coleoptera found see the *Kew Bulletin* **55**: 727-734 Publication date was June 2000. Edited by B. Verdcourt The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, U.K.

Note: it is not known if the *Kew Bulletin* is available without subscription. Consult the British Library.

The three beetles displayed in this exhibit are still to be identified due to my purchasing and incorporating the large collection of the late Henry George Colley into my own collection.

1. (K13) One specimen found by sweeping mixed grass and vegetation. 19. 06. 1998.

2. (M988) Two specimens found by peeling back the folds of the bark on a Washingtonia robusta a tree native to Mexico. 30. 06. 2003. Tree located in the main section of the Temperate House Kew.

Status code V: A species introduced but unlikely to become established, unless otherwise stated. Species given this status are not true additions to the British fauna and should not be included in the British Coleoptera checklists.

The beetles most likely arrived at Kew in root balls or plants.

Some Californian Insects – Natalie Lawrence

Introduction

This summer I visited north California with my family for four weeks. We stayed in San Raphael, on the edge of a mountainous wild area. This contained many species of butterfly, including Funereal Duskywings, Mylitta Crescents, Buckeyes, Ringlets, and Woodland Skippers. At first it looked rather barren, it was very dry and with quite stunted vegetation, but as I spent more time in the bush, the butterflies emerged. By far the best time to see the insect life, as well as other animals, was late afternoon, a few hours before sundown. Then the rock was warmed by the sun and species such as the Buckeye sunned themselves on the ground.

One of the problems of collecting insects in California is that there are very strict rules, and most places worth collecting in are National Parks. I had to be very careful about where and what I collected. One of the species I didn't obtain was the California Sister. This stunning butterfly frequents many habitats, ranging from woods to streams.

We also visited Yosemite National Park. Though there were not many butterflies in the wooded areas, the grasslands contained a wealth of insect life. Orange sulphurs, Cabbage Whites, Blues, Buckeyes, and many other species of Lepidoptera, Dragonflies, Damselflies and a whole host of other insects.

I didn't collect any specimens in these National Parks, because many were sites of special scientific interest, and had programmes for the conservation of the wildlife in the area. California is much more aware of conservation than England. Vast areas of wilderness are marked off as National Parks, and these provide a haven for the wildlife while still remaining accessible to the public.

Species List

Note: * not in the collection.

There are also some species in the collection, or that I saw, that I have not been able to identify

Lepidoptera

Small White *Pieris rapae*; Orange Sulphur *Colias eurytheme*; Acmon Blue *Plebejus aemon*; *Gulf Fritillary *Agraulis vanillae*; Mylitta Crescent *Phyciodes mylitta*; *Painted Lady *Vanessa cardui*; Common Buckeye *Junonia coenia*; *California Sister *Adelpha bredowii*; California Ringlet *Coenonympha tullia californica*; *Funereal Duskywing *Erynnis funeralis*; Woodland Skipper *Ochlodes sylvanoides*. Moth *Pyrausta* species

Odonata

Northern Bluet *Enallagma cyathigerum*; Blue-eyed Darner *Aeshna multicolor*; Pacific Spiketail *Cordulegaster dorsalis*; *Common Whitetail *Libellula lydia*; *Flame Skimmer *Libellula saturata*

Other insects

Band-winged Grasshopper (red) *Trimerotropis* family; Woodland Cicada *Platypedia* family (larval case)

Convolvulus Hawk Moth – Exhibit by David Oram (8127)

The Convolvulus Hawk Moth (*Agrius convolvuli*) found in the U.K. is part of a small genus (*Agrius*) of five or six species of hawk moths. As a species, *A. convolvuli* is a great migrant and found throughout the Old World (that is everywhere but the Americas), except the extreme higher and lower latitudes.

This year I have been lucky enough to watch five to ten of these moths at any one time feeding on tobacco plant flowers at dusk. This occurred most evenings over a period of two weeks (7-21 September) in the gardens of our apartment, near Horto, a small village on the west coast of the Pelion near Volos in Greece. The moth does not seem to be scared easily and I was able to observe from very close, these moths moving deliberately and carefully taking nectar from the *Nicotiana* flowers with their long tongues.

It is also attracted to light and whilst in Greece we found it would often venture into the restaurant later on in the evenings, around midnight. *A. convolvuli* appeared in the restaurant on the very first evening of our stay disrupting the meal of all the guests while I did my best to catch it.

Although it does not appear to be a resident in the UK it has been found in large numbers in some years, and in almost every part of the British Isles including oil drilling platforms in the North Sea (Young 1981). The specimen exhibited here was found in Northumberland.

Young, M.R. (1981). Insects and oil platforms. *Ent. Rec. J. Var.* **93**, 13.

Sussex Migrant Moths – Sarah Patton, (12382)

Two cases of specimens were exhibited. The first showed a selection of migrants taken at Kingsham, West Sussex, during the summer of 2003. These included four Small Mottled Willows *Spodoptera exigua* showing a variety of colour variations. Also of note, a Langmaid's Yellow Underwing *Noctua janthina* with a Lesser Board-bordered Yellow Underwing *Noctua janthe* for comparison and an aberrant Silver Y *Autographa gamma.*

The second case contained some micro-moths trapped at Kingsham, Stedham Common and Pagham Harbour including the plume moth *Stenoptilia zophodactyla* and the pyrale *Nephopterix angustella* There was also a Brimstone Moth *Opisthograptis luteolata* with pronounced brown lines along the costa.

A selection of photographs were also displayed, mainly of migrant moths (including Pale Shoulder *Acontia lucida*, Ni Moth *Trichoplusia ni* and Striped Hawk-moth *Hyles livornica*) but also Reed Dagger *Simyra albovenosa* which was a new species for Kingsham and Toadfiax Brocade *Calophasia lunula* reared from a larva. All the moths illustrated were caught (or reared) in 2003.

The Publications Committee of The Amateur Entomologists' Society

Over the years the Society has produced many different types of publications in its continued effort to promote the study of entomology. For many years now these have been within the remit of The Publications Committee, chaired by the General Editor. The display this year was one of all the pamphlets so far produced, including the different editions of those that have been revised over the years, as well as the most recent publications, *Larval Foodplants of the Butterflies of Great Britain and Ireland*, which was available for the first time on the day of the exhibition. It is hoped to produce similar displays of the other Society publications over the next few years.

Interesting species seen in Devon during 2003 – Roy McCormick

The specimens shown are not necessarily the ones recorded

0718 *Ethmia dodecea* Haw. Seen at Braunton on 25.6.2003, S.Hatch and Teignmouth, 9.7.2003.

0964A *Cochylis molliculana* Zell. From the first sighting of this species at Berry Head a few years ago, it has now spread to Exmouth where it was taken in numbers on 7.7.2003 and Weycroft, Axminster, where one was seen on 9.8.2003.

1123 *Ancylis laetana* Fabr. Seen, with confirmed specimens, for the first time in Devon at Hannaborough Moor on 31.5.2003, where five or six specimens were seen by B. Henwood and myself. There is one vague record from Braunton in 1932.

1183 *Epiblema foenella* Linn. Seen at Exmouth on 4.7.2003, but more surprisingly at Teignmouth on 27.7.2003.

1296 *Crambus silvella* Hb. A completely new species for Devon which was taken at the Offwell Wildlife and Woodland Trust site near Honiton on 5.8.2003; further work to find the breeding site was carried out without success.

1357 *Evergestis extimalis* Scop. A further specimen seen at Holcombe on 18.7.2003.

1358 *Evergestis pallidata* Hufn. A rarely seen species which was recorded at the Offwell Wildlife and Woodland Trust site on 26.7.2003 and at Weycroft, Axminster on 9.8.2003.

1367 *Pyrausta cingulata* Linn. Another of our seldom seen species, this one taken at Braunton Burrows on 9.8.2003.

1421 *Aglossa pinguinalis* Linn. Large Tabby. Another of the species with few records, this one taken at Woodbury Salterton on 23.7.2003.

1425 *Galleria mellonella* Linn. Wax Moth. Despite all the bee keeping that goes on in Devon, this species is rarely reported; this one from Hatherleigh on 4.8.2003

1441 *Oncocera semirubella* Scop. The species was found abundantly flying during the day at Humble Green Point, near Lyme Regis on 19.7.2003.

1456 *Epischnia bankesiella* Rich. The second Devon record of this species was found by B.Heckford on 20.9.2003, at Soar Mill Cove; a small larva on *Inula crithmoides* (golden samphire).

1465 *Nephopteryx angustella* Hb. Only three records of this species since 1962, but despite searches being made, no signs of feeding in spindle berries has been found; this specimen taken at Bere Alston on 8.9.2003.

1472 *Euzophera bigella* Zell. This the second record for Devon with the first, two specimens bred from pomegranate, September, 1999. This specimen taken at light, Teignmouth, 7.6.2003.

1494 *Capperia britanniodactyla* Gregs. Another of our species with less than ten records since the 1980's; this one from Branscombe on 14.6.2003.

1523 *Oidaematophorus lithodactyla* Treit. Larvae were found commonly feeding on fleabane, Dawlish Warren, 6.6.2003; these were bred to adult.

1655 *Tethea or or* D.& S. Poplar Lutestring. The first confirmed specimen for Devon was taken by R.Wolton at Hannaborough Moor, Hatherleigh on 27.5.2003; the specimen shown was taken on a visit to the site on 31.5.2003.

1801 *Perizoma taeniata* Steph. Barred Carpet. There have been several sightings of this species at Watersmeet, Exmoor in the last few years, but it was a complete surprise to find it absolutely abundant on 12.7., S.Hatch and 14.7.2003, myself with several members of Devon Moth Group.

1807 *Perizoma albulata albulata* D.& S. Grass Rivulet. 46 specimens of this species were seen at Braunton Burrows between 8 and 27.6.2003, by S.Hatch.

1818 *Eupithecia irriguata* Hb. Marbled Pug. A new site for this species was found by B. Bewsher, Devon Moth Group, at Whiddon Down, near Chagford on 19.4.2003, one at light.

1873 *Venusia cambrica* Curt. Welsh Wave. A species that has been seen at Watersmeet, Exmoor before, but it is nevertheless uncommon; seen on 12 and 14.7.2003.

1879 *Lobophora halterata* Hufn. The Seraphim. A species that has few records from VC4, seen at Hannaborough Moor on 31.5.2003, several and Quoditchmoor, near Ashwater on 21.6.2003, three.

1885 *Abraxas sylvata* Scop. Clouded Magpie. This species headquarters is mainly in VC4, but it was surprising to see it so common at Watersmeet, Exmoor on 12 and 14.7.2003

1918 *Selenia lunularia* Hb. Lunar Thorn. A species that is rarely seen in numbers, seen at Hannaborough Moor, Hatherleigh on 23.5.2003, Pulworth, Hatherleigh on 28.5.2003 and Shaugh Prior, near Plymouth on 31.5.2003.

1973 *Acherontia atropos* Linn. Deaths-head Hawk. Buckland Brewer, Bideford, 14.9.2003, S.Hatch, with a further specimen reported to S.Hatch by a member of the public from Westward Ho!, 20.9.2003, and a larva being found by B.Bewsher at Hyner Vale, Bovey Tracey in a potato field on 30.8.2003; this specimen is being bred through by B.Bewsher

1978 *Hyloicus pinastri* Linn. Pine Hawk. One reported from West Hill, near Ottery St. Mary by P.Baker on 24.6.2003. This will be the first record since June 1966.

1982 *Hemaris tityus* Linn. Narrow-bordered Bee Hawk. Reported from Coombe Meadow, Hatherleigh by G.Barnes to R.Wolton, several seen on the site on 12.6.2003. A new site for the species.

1990 *Hyles livornica* Esp. Striped Hawk. I have four sightings for 2003: Exmouth, 4.7.2003; Hartland Point, 22.6.2003; Slapton Ley, Mid July, 2003 and Spitchwich Manor, Poundsgate where 12 larvae were found feeding on *Antirrhinum* plants; most of these succumbed to viral infection despite the larvae being distributed to other members, and only two moths were bred.

1996 *Furcula bicuspis* Borkh. Alder Kitten. We have few records of the species from VC4, so it was nice to see one at Hannaborough Moor, Hatherleigh, on 31.5.2003; another was reported from Slapton Ley at end of June 2003.

2009 *Ptilodontella cucullina* D.& S. Maple Prominent. With exceedingly few records of the species pre. 1972, and only two records after that it was a pleasant surprise to add one more from Watersmeet, Exmoor on 14.7.2003. This makes the total records to date, seven.

2039 *Atolmis rubricollis* Linn. Red-necked Footman. With only 11 records of the species since the 1980's and with none of them from East Devon, it was good to hear of two from the West Hill, Ottery St.Mary area, one on 13.6.2003, P.Baker and another from A.Swash, who recently moved into the area.

2056 *Parasemia plantaginis plantaginis* Linn. Wood Tiger. A difficult species to catch up with and in my estimation is probably commoner than the records suggest. One taken and photographed by J.Walters on 12.7.2003, Hickaton Hill, Dartmoor.

2076 *Meganola albula* D.& S. Kent Black Arches. Although we have several records of this species in the Dawlish Warren, Exminster and Torquay area, we had none from East Devon until I found one at light at Combpyne, near Rousdon on 19.7.2003; this is the furthest east so far.

2104 *Standfussiana lucernea* Linn. Northern Rustic. Hartland Point appears to be one place where this species can be reliably seen and we had several fresh specimens at light on 22.6.2003 at this locality.

2140 *Cerastis leucographa* D.& S. White Marked. Investigations to find the true spread of this species, found it at Roborough Wood, 17.4.2003; Great Torrington woodland, 29.3.2003 and the usual site at Watergate, Great Torrington on 29.3.2003. It has been seen at Bideford in the west to Tiverton in mid Devon with the main concentrations around the Bideford, Kingscott and Great Torrington area.

2172 *Hadena albimacula* Borkh. White Spot. A survey to monitor this BAP species produced four at light on 14.6.2003, Branscombe undercliff

2185 *Orthosia populeti* Fabr. Lead-coloured Drab. With a whole lot of records in the past with some of these obviously in error and with no voucher specimens to support, we have finally found a site where the species lives; Hannaborough Moor, Hatherleigh, 12.4.2003, two specimens taken by R.Wolton which were sent to me for confirmation.

2208 *Mythimna loreyi* Dup. The Cosmopolitan. We have not seen this maigrant for around three years, this year we have had two, one from Abbotskerswell, on 19.9.2003 and the other at Shaugh Prior, Plymouth on 13.9.2003.

2279 *Acronicta aceris* Linn. The Sycamore. With very few records in Devon, this species appears to be increasing its range from East Devon where it has been found for a number of years. Exmouth, 7.7.2003, six; Combpyne, near Rousdon, 19.7.2003, two and Beacon, Honiton, 15.7.2003, one. Last year we had one from Exeter.

2304 *Trachea atriplicis* Linn. Orache Moth. This rare migrant has again graced us with its presence, one taken at Dawlish by P.Franghiadi, 2.7.2003.

2311 *Ipimorpha retusa* Linn. Double Kidney. R.Wolton gets this species with some regularity from the country surrounding Hatherleigh which is boggy moorland with large stands of aspen and sallow and willow in abundance, this one from Gribbleford Bridge on the River Lew, 1.8.2003.

2367 *Celaena haworthii* Curt. Haworth's Minor. This is the second confirmed Devon specimen, taken at Crown Hill, Plymouth on 15.7.2003. The specimen was sent to me for confirmation by J.Beswetherick.

2412 *Deltote uncula* Cl. Silver Hook. Braunton Burrows appears to be one place where this can be seen reliably, S.Hatch saw one on 3.5.2003 and ten from 8 to 14.6.2003.

2432 *Trichoplusia ni* Hb. The Ni Moth. Another rare migrant we have not seen for a couple of years, two from Hartland Point on 22.6.2003.

2467 *Lygephila craccae* D.& S. Scarce Blackneck. Another monitoring expedition to check on this BAP species found several larvae, but not feeding on *Vicia sylvatica* (wood vetch), but on *Vicia cracca* (tufted vetch). Specimens were bred to prove the species was correct, but with a very high mortality from parasitic wasps.

Some Butterflies seen in the Greek island of Corfu during the last week of May 2003 – P.J.C. Russell (8977)

A case of butterflies was shown, in which the summer broods of five Pierids were compared:

Artogeia rapae, A. mannii, A. napi meridionalis (? Possibly *A. balcana), A kruperi* and *Leptidea sinapis;* completing the Whites were the single brooded *Gonepteryx rhamni* and *G. cleopatra*. The summer broods *of Polygonum c-album* and *P. egea* could be compared, some examples of *Melitaea didyma* were shown, which highlighted the colour variation of the females and two males of the Snout Butterfly, *Libythea celtis* were included. The Lycaenids were exemplified by *Satyrium ilicis, S. acaciae and Cyaniris semiargus,* of which the latter two were new records for this island. The three Satyrids, *Melanargia larissa, Hipparchia volgensis delattini* and *Kirinia roxelana* completed the display.

The Simpson Collection of Entomological Memorabilia

An exhibit of a folder containing 53 photographs depicting nearly 200 items of entomological equipment. Many of the items shown have been added to the Collection during the past twelve months.

The Collection comprises entomological equipment dating from Victorian times to the present day and has been formed to preserve historically interesting and important material.

All items in the Collection are available, to anyone interested, for study or photographic purposes.

Moths from the Falkland Islands – Graham R. Smith (4950)

The eight specimens of Noctuid moth were found dead inside a kitchen strip light cover within a dwelling house at Hill Cove Settlement, on the north coast of West Falkland during a business trip on the 23rd October 2002. Although the season was late spring and a few flies, a wasp and a micromoth were seen active in this relatively sheltered locality, the moths had most likely become trapped in the light during the previous summer. Fortunately the specimens had not been damaged by mites or lice etc probably due to the cold climate. Although some of the moths are worn and faded, they most likely belong to the endemic species *Pareuxoina falklandica*, (The Brocade). The wing venation in the examples (all male) is very similar. A female was amongst the find but was in such poor condition that I discarded it, however, the markings were consistent with that of typical *falklandica*. The colour and markings between the moths exhibited is variable. Ground colour varies from greyish black to a warm chestnut. The stigmata, where present, seem consistent. The reniform stigma is present on each specimen and of a similar shape but both claviform and orbicular stigmata are vestigal on some. The inner and submarginal lines bear strong similarities, where present, but the hindwings vary in the extent of any grey shading evident. I cannot say with any certainty that they are all of the same species unless examination of the genitalia can confirm they are all identical.

The Falkland Islands are separated by 300 miles of the South Atlantic Ocean from the mainland of Argentina but it is not inconceivable that migrant moths can and do reach the Falkland Islands. Certain migrant butterflies e.g. *Vaneesa cardui*, Painted Lady and *Vanessa virgiensis*, American Painted Lady have been recorded in recent years. Very little information is available on Falkland Island insects; the best source to my knowledge is the website Falklandsconservation.com.

Enlargements of a couple of Falkland Island stamps were included with the exhibit. One depicted *Pareauxoina falklandica*, (The Brocade) and the other *Issoria cytheris cytheris*, (The Queen of the Falklands Fritillary), although I was too early to see this summer butterfly on the wing during the visit.

Photographic Exhibit

Two photographic images of a male Purple Emperor, *Apatura iris*, Linn, imbibing on horse manure in Bentley Wood on the 13th July 2003 plus two views of a Red Admiral, *Vanessa atalanta*, Linn. feeding on dogs faecies in Grovely Wood, 20th July 2003.

Also some photographs of some migrant Lepidoptera of 2003 were exhibited including:

Two images of a very worn male Bedstraw Hawk Moth, *Hyles gallii* Rott., which I found flying in bright sunshine during the early afternoon, at Grovely Wood, Wiltshire on the 19th July.

A mated pair of Clouded Yellows, *Colias croceus* Geoffroy, at Fontmell Down Dorset. 9/08/03 and a Humming-bird Hawk Moth, *Macroglossum stellatarum* Linn., in action during Midsummer's Day. Cranwell, Lincolnshire, 24th June.

* * *

Butterflies of Maison Jolie in Southern France

by Martin Laux (9561)

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In 2003 the family summer holiday was spent in southern France. This short article describes the time of year, the location and its geography, vegetation, weather and the butterflies caught there.

The holiday started on Saturday 2nd August and finished on Saturday 16th August 2003.

Our cottage, Maison Jolie was situated in Faugeres, in the unusually named road, Rue Derriere de la Ville. Faugeres is a small village 20 miles north of Beziers and 50 miles west of Montpellier. The village is located in the middle of Department 34 - Herault, in the Languedoc-Roussillon region. Faugeres is within the Parc Naturel Regional du Haut Languedoc. Maison Jolie was 260 metres above sea level, the surrounding hills peaked at 500 metres.

Vegetation in the area consisted of grapevines and uncultivated areas were either areas of 'garrigue', dry scrub with various prickly bushes and aromatic plants or evergreen oaks.

The weather was hot and dry. Daytime temperatures regularly reached 40 degrees centigrade. Although there was one thunderstorm the rain was minimal. Our holiday coincided with the heat-wave experienced in Britain and the numerous forest fires reported throughout southern Europe. The weather was very hot and very dry.

The butterflies caught at this location were:

PAPILIONIDAE	Scarce Swallowtail	*Iphiclides podalirius*
PIERIDAE	Small White	*Pieris rapae*
	Southern Small White	*Artogeia mannii*
	Clouded Yellow	*Colias croceus*
	Cleopatra	*Gonepteryx cleopatra*
	Wood White	*Leptidea sinapis*
LYCAENIDAE	Purple Hairstreak	*Quercusia quercus*
	Small Copper	*Lycaena phlaeas*
	Long-tailed Blue	*Lampides boeticus*
	Holly Blue	*Celastrina argiolus*
	Brown Argus	*Aricia agestis*
	Chalkhill Blue	*Lysandra coridon*
	Adonis Blue	*Lysandra bellargus*
	Common Blue	*Polyommatus icarus*

NYMPHALIDAE	Two Tailed Pasha	*Charaxes jasius*
	White Admiral	*Limenitis camilla*
	Red Admiral	*Vanessa atalanta*
	Painted Lady	*Vanessa cardui*
	Silver-washed Fritillary	*Argynnis paphia*
	Spotted Fritillary	*Melitaea didyma*
SATYRIDAE	Grayling	*Hipparchia semele*
	Tree Grayling	*Neohipparchia statilinus*
	Striped Grayling	*Pseudotergumia fidia*
	False Grayling	*Arethusana arethusa*
	Great Banded Grayling	*Kanetisa circe*
	Meadow Brown	*Maniola jurtina*
	Southern Gatekeeper	*Pyronia cecilia*
	Small Heath	*Coenonympha pamphilus*
	Wall Brown	*Lasiommata megera*
HESPERIIDAE	Grizzled Skipper	*Pyrgus malvae*
	Mallow Skipper	*Carcharodus alceae*

These thirty-one different butterflies were caught in a two-week period in the summer. I can only wonder how many species would be caught throughout the year, especially if a concerted effort was made to seek out butterflies populating the area around Faugeres.

It is worth noting that according to the excellent book 'Les Papillons de jour de France' that all of these butterflies are recorded in Herault, except the White Admiral. Certainly the White Admiral was relatively common in Faugeres. It is also interesting that the Southern White Admiral, *Limenitis reducta*, was not found at this location. Previous collecting, reported in 'Butterflies of Les Amandiers', at a similar time of year, at a location only 30 miles south west of Faugeres found the Southern White Admiral, but not the White Admiral.

My thanks go to my son David, his friend Tom Fitzpatrick and my young nephew Jamie Reed for their enthusiasm to capture every butterfly and their interest in the subsequent identification process.

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Sphragis on Apollo female

by Matthew Rowlings (9108)

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While looking for the Piedmont Anomalous Blue (*Agrodiaetus humedasae*) in the Cogne valley of north western Italy I was pleased to see so many Apollos (*Parnassius apollo*) flapping about in the brief glimmer of sunlight between rain showers. These were of a particularly dusky grey form, not the brilliant white I'm used to seeing at higher, alpine altitudes. I found a female and managed to photograph the huge sphragis that is deposited at the end of the female's abdomen by the male during copulation. He attaches this hard structure to the female to prevent further mating, thus maximising his sperm's chances of fertilising the eggs. I have still not managed to find the structure on an unmated male – it is difficult to get a close look at this species due to the heavy protection it enjoys, even catching one is risky!

* * *

A Small Yellow Underwing Observation

by Jan Koryszko (6089)

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On May 16th 2002, Derek Heath and Charles Byatt visited Gnosall disused railway line, Staffordshire. The day was quite sunny and warm. They noticed Small Yellow Underwing *Panemeria tenebrata* (Scopoli) flying actively in the sunshine, visiting a number of wild flowers. Derek captured one of these moths for me to inspect. He thought it looked like an aberration. Charles saw similar moths among the typical form of this species.

Two days later, Derek brought the moth for me to look at. It was still alive. It was not a rare aberration. The fore wings were a little more reddish than others of the typical form. This does occur amongst this species. However, it was most pleasing to have a record of this moth at Gnosall disused railway line. It has been over 20 years since the last record for this 10km square. It is a common moth in the county. With entomologists thin on the ground, it is lack of observation over the years rather than true absence.

Of interest, I released this moth in my garden after over 48-hours in captivity. The garden was full of flowers, but the moth flew onto a patch of wet grass. It inserted its proboscis onto the droplets of rain water, which had fallen that morning. The moth may have been seeking moisture to avoid desiccation. Maybe, during long periods of drought, or even long spells of bad weather, when some species of Lepidoptera are not on the wing, morning dew or rain water droplets on foliage, on which they are roosting, will sustain their survival until they are next able to seek nectar again?

* * *

The Convolvulus Hawk-moth *(Agrius convolvuli)* in Cornwall, September 2003

by Colin Hart (3845)

"Fourpenny Cottage", Dungates Lane, Buckland, Betchworth, Sussex RH3 7BD.

We spent the third week of September 2003 on holiday on the Lizard peninsula in Cornwall. On 15th September in brilliant sunshine we walked along the beach from Porthleven to Gunwalloe for lunch. Just as you leave the beach at Gunwalloe Fishing Cove there is an unusual layer of gravel cemented together with a black tarry substance. It looks for all the world like abandoned road tarmac but is in fact the remains of an ancient beach which dates from before the last ice age (Bates, 2000).

Growing over this layer was abundant bindweed, which I immediately noticed was mostly stripped of leaves. It took a couple of seconds to see the first Convolvulus Hawk larva, then another, then another. In all I counted fifteen larvae over an eight metre stretch of beach. All except one was in their final instar. Four larvae were taken to rear and all pupated within four days.

The ancient beach was in full sun, facing south-west and hot to the touch, the larvae were clinging to the almost bare bindweed stems and in many cases also laying on the substrate. An ideal spot, I would have thought. for these larvae from the Mediterranean.

The following day we were walking along the coast path north of Porthleven. On entering the National Trust land at Nare Point we saw a female adult Convolvulus Hawk at rest on the sign.

Reference

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The moths of Mepal – and now Witcham

by Rob Partridge (8956)

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Five previous articles have appeared in the Bulletin, describing the moths that I have recorded in and around my home village of Mepal in Cambridgeshire (VC 29). These can be found in the following volumes: **51**: 293-297; 52: 267-272; **53**: 245-247; 55: 265-268 and **58**: 163-165.

Six seasons have elapsed since the last report. A number of new species have been recorded, thanks largely to the efforts of David Hopkins in 2002 and 2003. David lives and records in the nearby village of Witcham, which, as the crow flies, is little more than a mile from my own garden. He used an mv light throughout 2002 and added an actinic lamp to his armoury in August 2002.

The surprising number and nature of the additional species he has found may be explained in part by the subtle differences between the neighbouring villages. Witcham is on a hill - well, it is in fenland terms -and this has certainly led to the recording of some interesting migratory birds – Redstarts, for example, though scarce visitors in Cambridgeshire, are annual migrants here. The soil types are more varied in Witcham, ranging from clay through loams to occasional small areas of gravel. There are also more mature gardens, established hedgerows and grass fields for livestock than in Mepal. Finally, David's garden and farm are close to the remains of Mepal's Second World War airfield, a brownfield site of considerable size and importance until much of it was developed in the mid 1990s.

The list also contains new species that I have recorded and a small number of inexplicable omissions of common species from earlier lists – I hope that their absence has not caused anyone any sleepless nights!

SESIIDAE

Hornet Moth (*Sesia apiformis*). Most poplar trees in our area, whether solitary specimens or in roadside stands, seem to have a colony of this moth. The exit holes close to the ground are easily discovered and often the recently emptied pupal cases can be seen inside the tunnels. It can be fairly described as locally common here.

LASIOCAMPIDAE

Pale Eggar (*Trichiura crataegi*). The first record was in Witcham to mv on 19.8.02. Its absence from Mepal for the previous ten years is, as for several of the species listed, puzzling, especially as it did finally appear here in 2003.

DREPANIDAE

Barred Hook-tip (Watsonalla cultraria). One came to light in Witcham on 17.9.03, a relatively late record. It was a female and laid a number of eggs. The only beech trees for many miles are isolated garden specimens.

THYATIRIDAE

Peach Blossom (*Thyatira batis*). I was surprised that this lovely moth was found on a fen drove less than half a mile from my house! It came to David's mv light in a small area of less intensively cultivated arable land where there are a few trees and old, unmanaged hedges.

Frosted Green (*Polyploca ridens*). A single specimen was taken at actinic in Witcham on 18.4.03.

GEOMETRIDAE

Small Emerald (*Hemistola chrysoprasaria*). First noted at actinic in Mepal on 11.7.2000, several have appeared since. This is one of a few, regularly occurring species that are possibly established on clematis in gardens.

Maiden's Blush (*Cyclophora punctaria*). One came to mv in Witcham on 15.8.02. It may be resident on our scattered oak trees.

Clay Triple-lines (*Cyclophoria linearia*). One was taken in Mepal on 26.8.99 at actinic light. This is another beech-feeding species.

Small Fan-footed Wave (*Idaea biselata*). Singletons, to mv in Witcham on 5.8.02 and 15.6.03. In view of its habitat of hedgerows and its wide choice of common foodplants, its apparent local scarcity is rather odd.

Small Scallop (*Idaea emarginata*). First appearing to a kitchen window in Witcham on 30.7.02, it also came to mv in July 2003.

The Gem (*Orthonama obstipata*). A female came to actinic in Witcham on 27.8.02. It laid freely and the resulting larvae began to produce imagines on 17.10.02. Another at the same site to mv on 10.8.03.

Purple Bar (*Cosmorhoe ocellata*). One came to mv in Witcham on 28.5.03. Another ubiquitous species feeding on common foodplants. A member of the second brood was attracted to actinic light here on 2nd August.

The Phoenix (*Eulithis prunata*). In Witcham to mv on 24.7.03.

Blue-bordered Carpet (*Plemyria rubiginata rubiginata*). This species has not come to light in either village but I netted one by a mature blackthorn hedgerow near Witcham on 7.7.2000.

Green Carpet (*Colostygia pectinataria*). This has been a common species throughout the recording period – it seems to have been unintentionally omitted from earlier lists.

Dark Umber (*Philereme transversata britannica*). Specimens came to light in Witcham – mv on 8.7.03 and to actinic on 18.7.03. Buckthorn is present in a few local hedgerows.

Sandy Carpet (*Perizoma flavofasciata*). A number were recorded to mv in the same area as the Peach Blossom. The more favoured foodplant according to Skinner, red campion, is not found often in the fens but white campion is widespread.

Foxglove Pug (*Eupithecia pulchellata pulchellata*). To actinic in Witcham on 15.6.03 and to mv on 16.6.03.

Netted Pug (*Eupithecia venosata venosata*). This is one of the more surprising records. The pugs are not famous for wandering; on the other hand, we don't have any chalk or limestone in the area, and I am not aware that the foodplant, bladder campion, grows here. A search will be made for it in 2004. A fresh specimen of this very attractive moth came to mv in Witcham on 16.6.03.

Brindled Pug (*Eupithecia abbreviata*). First noted to mv light in Mepal on 8.4.99.

Broom-tip (*Chesias rufata rufata*). One on 16.7.03 at mv light in Witcham. If resident, it can only be on broom bushes in gardens.

Grey Carpet (*Lithostege griseata*). To record this species once here seems remarkable but we have had it twice in three years. On 26.6.2001, Leigh Marshall took one at mv on the Ouse Washes nature reserve during his regular moth recording there. The specimen now resides in my reference collection. David had another to mv in Witcham on 15.6.03. These are probably wanderers from the Brecks but at least one of its foodplants, treacle mustard (*Erysimum cheiranthoides*) is common here.

Small Seraphim (*Pterapherapteryx sexalata*). Another omission – first recorded in Mepal on 2.7.93.

Scorched Carpet (*Ligdia adustata*). One to mv in Witcham on 18.7.03. The foodplant, spindle, does not occur anywhere in this area, as far as I know but it may be present in recent amenity plantings.

Purple Thorn (*Selenia tetralunaria*). I took this species to actinic light near Ely on 8.4.92. It then came to actinic in Witcham on 10.5.02 and again in July of that year.

Oak Beauty (*Biston strataria*). This is one of my favourite moths, so I was pleased to see it come to mv on 7.3.00 – another appeared the following year. I used to see this regularly when I was recording in Norfolk.

Willow Beauty (*Peribatodes rhomboidaria*). Another omission I'm afraid. My earliest specimen is dated 23.7.94 – it appears annually in reasonable numbers.

NOTODONTIDAE

Poplar Kitten (*Furcula bifida*). This seems to be a fairly local species. One came to my mv light in Mepal on 15.5.99, and this was followed by two more in Witcham on 29.5.03 and 7.8.03, both to mv.

Coxcomb Prominent (*Ptilodon capucina*). The first record was in Mepal on 6.5.92. It appears annually in small numbers.

Pale Prominent (*Pterostoma palpina*). First recorded in Mepal on 13.4.91. This is our commonest prominent and how it was omitted from earlier lists is a mystery.

NOCTUIDAE

True Lover's Knot (*Lycophotia porphyrea*). A rather surprising record but presumably it wanders well away from its preferred heathlands; Witcham, to mv light on 27.7.02.

Dog's Tooth (*Lacanobia suasa*). In the summer of 2003, David phoned to tell me that he was taking this moth in numbers in his garden trap. As I had never recorded it despite keeping an eye open for it, I asked to see some and sure enough he was, as usual, correct. I had not run my trap for a while but I did that night and four appeared. It was very common for some weeks. It seems remarkable that it had not been noted before but Skinner does mention peaks of emergence varying from year to year.

White-speck or American Wainscot (*Mythimna unipuncta*). In this exceptional year for migrants one came to mv in Witcham on 30.9.03.

The Wormwood (*Cucullia absinthii*). A good species for Cambridgeshire, one came to light in Witcham on 14.7.02, and another there in the summer of 2003. Mugwort is a common plant around our arable fields and droves.

Black Rustic (*Aporophyla nigra*). Undoubtedly a species that is spreading in this part of the world. The first one came to mv in Witcham on 18.9.02 and in 2003 several were taken in Mepal.

The Coronet (*Craniophora ligustri*). The ash is probably our commonest tree but this species has only appeared once, to mv in Witcham on 8/7/03.

The Olive (*Ipimorpha subtusa*). This species came to mv in my garden on 5.8.00, and twice more the following year. It also appeared in Witcham on 27.7.03 and subsequently.

Rustic (*Hoplodrina blanda*). A specimen date of 27.7.92. This moth is common annually though in smaller numbers than the very similar The Uncertain (*H. alsines*).

Small Mottled Willow (*Spodoptera exigua*). A single specimen of this migrant came to mv in Witcham on 17.8.03. It was widely recorded in England in 2003.

Scarce Bordered Straw (*Helicoverpa armigera*). Another migrant though considerably less common in typical years than the above. It cam to mv in Witcham on 30.9.03.

Nut-tree Tussock (*Colocasia coryli*). Although I have recorded this species elsewhere in VC29, it has not appeared locally until 16.4.03 when it came to mv light in Witcham.

Dark Spectacle (*Abrostola triplasia*). Another moth for which I have kept watch over the years among the many specimens of The Spectacle (*A. tripartita*) that are seen annually. The specimen that came to David's mv on 17.6.02 was more easily recognisable and distinctive than I had expected. Another appeared here on 4.6.03.

Mother Shipton (*Callistege mi*). I used to find this moth regularly in Norfolk. David found it first on 31.5.02 in a local meadow. Subsequently, it was discovered flying in two other suitable sites some miles away.

Small Fan-foot (*Herminia grisealis*). This was an interesting discovery in that we do not have many oak trees to begin with, let alone enough to provide the withered leaves that the moth requires. Nevertheless, one appeared to light in Witcham on 11.7.02 and in 2003 another 3 came to mv on 21st of June.

This list adds a further 44 species to the 285 published up to 1999, giving a total of 329 macromoths as included in Skinner. It is clear from David Hopkins' results over two years that many more may await discovery as long as one is prepared to trap in new places even if these are only a short distance from regular sites, and even if, to our eyes, they have few differences from them. The moths obviously see things differently.

My thanks to David for sharing the details of his catches and for showing me several new species in the process. Thanks also to Leigh Marshall for doing the same while he was recording at the Ouse Washes.

Reference

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Some Records of Interest of Butterflies and Moths

by John Richard Beaumont (7331)

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The following records include some butterflies and moths of interest from the last ten years or so. They have been encountered via three main sources:

- My Robinson's Mercury Vapour light trap
- Bumped into on holiday
- Found in my career as a gardener

New Butterflies

Three butterflies have appeared for the first time in Netterton, Huddersfield. These are the Gatekeeper, *Pyronia tithonus,* the Speckled Wood, *Pararge aegeria,* and the Purple Hairstreak, *Neozephyrus quercus*. My first sightings were:

Gatekeeper 17/8/00 at Magdale, Netterton, Huddersfield

Speckled Wood 5/9/02 at Metham Hall, Metham, Huddersfield

Purple Hairstreak 6/9/02 at Magdale, Netterton, Huddersfield

Moths of interest

The following moth records were firsts at MV light from my garden in Netterton, Huddersfield:

Scarce Silver Lines *Bena bicolorana* 20/7/01

Plain Clay *Eugnorisma depuncta* 9/8/01

The Streak *Chesias legatella* 6/10/01

Red Sword Grass *Xylena vetusta* 25/1/02

Brown Rustic *Rusina ferruginea* 4/6/02

The Olive *Ipimorpha subtusa* 30/7/02

Black Rustic *Aporophyla nigra* 27/9/02

Another moth was found in the day time by accident:

Mother Shipton *Callistege mi* 22/5/03 Expanding its wings resting on clover at Magdale, Netterton.

Holiday records

Ochraceous Wave *Idaea serpentata* was found in a secret location in Jersey. At the end of July 1995 it was found at rest on a wall with numbers of Speckled Footman Moths *Coscina cribraria* subspecies *bivittata* (South) and *arenaria* (Lempke).

Other Jersey moths include:

Bordered Grey *Selidosema brunnearia* 26/7/01 on the Five Mile Road, Jersey

Portland Moth *Actebia praecox* 25/8/01 Pontin's St Anne's

Orache Moth *Trachea atriplicis* 25/7/95 St Aubin's

* * *

A Visit from a Spanish Queen

by Jan Koryszko (6089)

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On the very hot afternoon of 3rd August 2003, I was sitting in my lounge at around 3.30pm when I noticed a butterfly land outside on the sunlit glass window. I went to investigate. The butterfly had its wings open and was struggling to get a foothold on the glass. I had a clear view of its underside. On going outside for a further look, I felt a rush of adrenaline when I realised I was looking at the very rare migrant, the Queen of Spain Fritillary *Issoria lathonia* (Linn.). I could not believe my eyes.

I am familiar with this rare species. I have four foreign set specimens in my Lepidoptera collection.

I contacted the Staffordshire county Lepidoptera recorder, Mr. D.W. Emley, to see if there had been any other reports of this species in the county. He said none had been reported. Pleasing though it was to see, it is probable that it may have been bred and released by an entomologist, or possibly an escapee. I would be pleased to hear from any entomologist who has released or lost any of their bred stock of Queen of Spain Fritillary. On the other hand, with exceptionally fine, hot weather conditions during July and August 2003, my sighting may well have been a genuine migrant.

Marbled Skipper resting posture

by Matthew Rowlings (9108)

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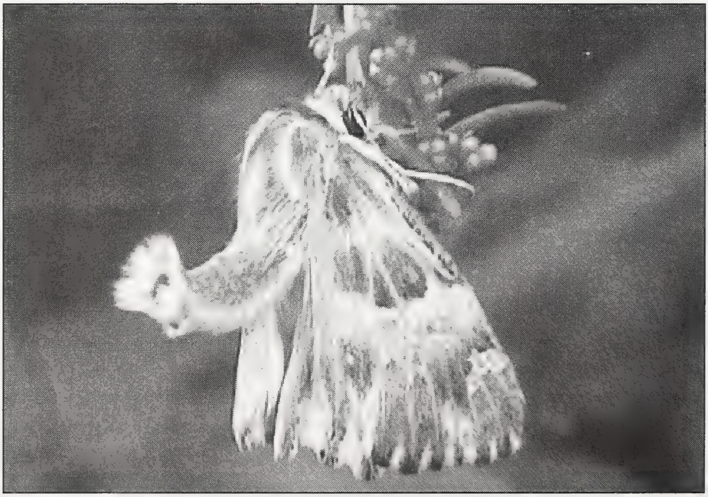
On several occasions in 2003 I encountered the Marbled Skipper (*Carcharodus lavatherae*) early in the morning. Due to bad weather or a cool night, this species was found resting prominently on a grass head that had gone to seed. The butterflies were clearly roosting here. They hold their wings at an amazing angle, perhaps open to over 300 degrees, practically wrapping the seed head within the wings. This effectively changed the appearance of the seed head, replacing its natural colours with the browns of the butterflies wings. The greys of the butterfly's wings act to give the false seed head the necessary rough texture. The wing fringes, indented physically and further exaggerated by undulating depth of white and brown markings, gave a rough "base" to the false seed head. The butterflies rest vertically with head upwards. They curl their abdomens out at right angles, which is rather curious as it doesn't blend in with the rest of the seed head deception. It did however completely break up the shape of the butterfly, which was already contorted out of normal shape. The tail could conceivably resemble a trapped, dead grass leaf or a broken off piece of seed head. An amazing roosting posture, reminiscent in part of the certain Geometrid species found on British shores.



Taken from Matt Rowlings excellent website on European Butterflies, http://www.eurobutterflies.com/species_pages/lavatherae.htm

The long-winded name game — obscure and curious items of entomological literature, part 8

by Richard A. Jones

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A continuing series of some strange books that have found their way into my library. Not useful key works by important entomologists, but strange oddities, quaint, off-beat or just plain entertaining.

***The natural history of insects, with their properties and uses in medicine* by R. Brookes, M.D., London, printed for J. Newberry, at the Bible and Sun, in St. Paul's Church-Yard, 1758.**

Purporting to be volume 4 in the series, this small duodecimo book of 360 pages covers a very strange mixture of creatures indeed. It includes beetles, grasshoppers, bugs, dragonflies, butterflies, flies, ichneumons, spiders, scorpions, worms and snails, among others.

It is the oldest book in my modest library, and although two leaves are badly torn away, I was happy to give a tenner for it in a Brighton bookshop some fifteen years ago. It was written in a time before the binomial system of naming plants and animals was accepted. There are none of the double-barrelled genus-and-species epithets that we know today, just ungainly and unmanageable English descriptive names. Let me give you some examples.

The very first named creatures are 'the elephant beetle', 'the rhinoceros beetle' and 'the stag beetle' with accompanying descriptions that might still help me today to identify them. But then follow 'the beetle with lunated, prominent, dentated jaws, and a smooth breast', 'the beetle with clavated feelers, and the cases of the wings on the fore part', 'the black dermestes with a white spot on each of the cases of the wings' and, wait for it, 'the dermestes of a cylindrical shape with a thick hairy neck and testaceous cases for the wings'. Phew, what a mouthful.

This was the way all beasts were named before Linnaeus's *Systema Naturae* was published. In fact Linnaeus's works had already begun to appear by that time, and Brookes quotes some of the new Linnaean names which had just started to be accepted. Coincidentally, it was in the same year, 1758, that the famous tenth edition of Linnaeus's *Systema Naturae* was published; that book is now taken as the formal start of modern systematic nomenclature. But Brookes was writing in the old style and I am still left guessing on the identities of most of the insects he described.

There are endless kinds of tenthredos (sawflies?), caterpillars (but not moths), palmer worms (more caterpillars it appears), tipulas (including water spiders, gnats and craneflies apparently), and a large number of various beetles, spiders, snails and worms. For the most part it is virtually impossible to guess what they might be named today in modern catalogues.

Nevertheless, the book does make fascinating reading. We learn that the ‘great brown locust was seen in several parts of the city of London, on the 4th of August 1748’. There are passable descriptions of the lives of various important species like the honeybee and silk worm. There are some decidedly archaic names like ‘lady-cow’ (ladybird), ‘cuckow-spit’ (spittle bug), ‘gad-flie’ (warble), ‘burrel flie’ (some sort of horse fly), but I still cannot quite work out what is a ‘burn-cow’ and ‘burst-cow’ – so named because of their effects on cows accidentally eating them – maybe some sort of oil or blister beetle.

Much of the book appears to have been cobbled together from various sources, and the author freely quotes Linnaeus, Moufet, Nieuhoff, Swammerdam and Ray amongst others. But at the end of the book are some chapters that might be more original from the author's pen or at least from some other source. One is a catalogue of West Indian and North American insects, including fire-flies, musketoes [*sic*] and musketo hawks (dragonflies). Oddly the author adopts new spellings here, including ladybirds instead of the ladycows we heard of earlier and weevils rather than weevels.

There then follows ‘A more particular account of bees, and the French method of managing them’, ‘Of the medicinal uses of cantharides (Spanish fly, *Lytta*) and ‘A farther account of ants, and their uses in medicine’, all great fun to read through.

But it is only in small doses that I find I can read the text, mainly because of the strange sentence construction and unusual spellings. It doesn't help that the book contains two symbols to represent the letter ‘s’. There is the standard ‘short’ form ‘s’ we still use today, along with the ‘long’ symbol ‘ſ’ which more closely resembles the modern letter ‘f’. The distinction arises because there are two pronunciations of the letter ‘s’. A ‘zed’ sound, like that in ‘legs’ (‘legz’) appears as ‘legs’, but a soft hissing ‘ss’, like that in ‘small’ appears as ‘ſmall’. This is particularly confusing when the author is writing about beetle wing-cases, because the printed version appears as ‘caſes’ and I keep on thinking that I need to order an esspresso or a laté.

A Further Note and Records of the Continued Spread of the Lily Beetle in Britain

by Jan Koryszko (6089)

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Since my last note in the *Bulletin* – Koryszko, 2003 – members may be interested to know the distribution progress of the Lily Beetle, *Lilioceris lilii* (Scopoli) in Britain.

After seeing my article, Mr. Andrew Salisbury (entomologist for the Royal Horticultural Society' garden, Wisley, Woking, Surrey) replied to me with new records for Staffordshire of this beetle. Records were from Eccleshall, Stafford in 1998, making them the first county records for *L. lilii.* In Cheshire the beetle appears much more common, with many records. It was first recorded in 1997.

The Lily Beetle became established in Britain in the early 1940s (Fox Wilson, 1942) and initially spread slowly across southeast England. By the late 1970s, it was known to be established in five south-eastern vice-counties. During the 1980s and 1990s, there was a massive extension in the range of this pest species of lilies and fritillaries, with scattered reports of the beetle as far north as the vice-counties of Cheshire and Lincolnshire.

Cox (2001) reported on this expansion of range in Britain and the beetle's known host range. The beetle's distribution and host range has been monitored at the Royal Horticultural Society (RHS) Garden, Wisley since the beetle's establishment in Surrey in 1940. *L. lilii* records are collated as part of the plant pest advisory work carried out by the entomologists at RHS Garden Wisley. Map references are gained, where possible, by requesting the postcode of the property with a Lily Beetle problem. This is converted to a grid reference by using the convert coordinates facility on the Streetmap internet site (www.streetmap.co.uk). Over 150 records of the beetle have been received in this way since March 2001. Additional records were obtained via postal surveys of RHS gardens, some National Trust gardens and other gardens that allow free access to RHS members. Further records were gained from requests to other coleopterists, the national recorder for chrysomelids (Mike Cox) and reviewing recent literature. As of March 2003, the Lily Beetle had been recorded from 265 10km squares and 46 vice-counties in England and Wales.

It was first reported in Scotland and Northern Ireland in 2002. The first report from Scotland was from the Netherlee area of south

Glasgow (grid reference NS582599, vice-county 76, Renfrewshire) (Hancock, 2002). By 2003, there was an established colony in Glasgow. In Northern Ireland, it was first discovered on the Kings Road, south Belfast (Irish grid reference J390734, vice-county H38, County Down) in June 2002 (Anderson and Bell, 2002). Again, by 2003, the beetle was well-established. There is evidence that the beetles may have been present in Scotland and Northern Ireland before 2002.

By November 2003, *Lilioceris lilii* had been recorded in all vice-counties south of north-east Yorkshire, the latest being Herefordshire. The northernmost English record is Newcastle-upon-Tyne. Global warming, with milder winters and summers, may be resulting in the northwards expansion of the ranges of many beetles, as the Lily Beetle has done in recent years. Further information on the life history of *L. lilii* may be found in the references.

Acknowledgement

I would like to thank Mr. Andrew Salisbury, entomologist for the Royal Horticultural Society, for all the records of the Lily Beetle that he has sent me. I am also grateful for his permission to use extracts from his publication on the species which appeared in *The Coleopterist* in September 2003. Without this my article would not have been possible.

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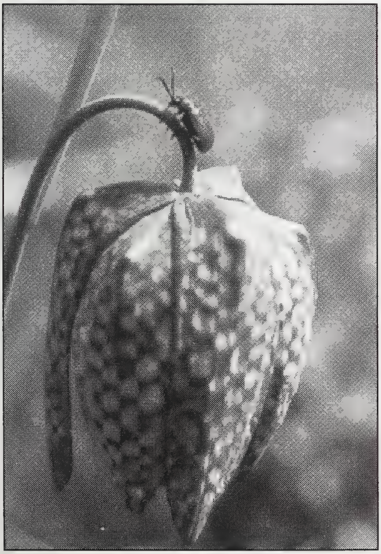
Are native British populations of the Snake's-head Fritillary *Fritillaria meleagris* threatened by the Lily Beetle *Lilioceris lilii*?

by Dr Peter G. Sutton (7388)

AES Habitat Conservation Officer, 2 Fir Tree Close, Flitwick, Beds. MK45 1NZ.

Further to Jan Koryszko's excellent update on the continued spread of the Lily Beetle in Britain, and upon finding a specimen of the Lily Beetle (Figure 1) on a cluster of Snake's-head Fritillaries in Bushy Park (Grid Reference: TQ 155 698), some interesting discussion was generated on the British Beetles e-group (beetles-britishisles@yahoogroups.com). This discussion considered the possible threat that this species posed to one of our rarest plants, the Snake's Head Fritillary *Fritillaria meleagris.* The general consensus was that at present, although the Lily Beetle has already been found in the unimproved water meadows that hold the last remaining populations of this plant, it did not pose an immediate threat since the beetle emerged as the fritillaries had begun to die back for the year. It was, however, pointed out that if current climatic trends induced earlier emergence times for the Lily Beetle, the potential for this species to put the remaining populations of the Snake's-Head Fritillary at risk would be increased.



The picture shows a specimen of the Lily Beetle investigating a Snake's-Head Fritillary in Bushy Park (one of London's Royal Deer Parks, adjacent to Hampton Court.) The specimen was found among a small isolated group of fritillaries (probably of a cultivated variety), which were growing in a meadow by the side of a drainage dyke, at midday on 25.iv.04.

In view of observed earlier emergence times for a wide range of invertebrates in recent years (notably for the Lepidoptera and Orthoptera), and assuming that the beetle would respond faster to climatic amelioration than the plant, it may be that the Lily Beetle could pose a serious threat to British populations of the Snake's-head Fritillary at some point in the near future.

The now serious pest status of the Lily Beetle in Britain prompted research into the biology of this species by the Royal Horticultural Society, and a study of known parasitoids for the Lily Beetle (Salisbury, 2001) revealed that there are four parasitic wasps that prey on this species in Europe. Two of these species, *Tetrastichus setifer* and *Lemophagus errabundus*, both of which are apparently specific to the genus, *Lilioceris*, have been found in the UK, with the first record of the latter species, which was presumably imported with the pest species, being a product of this study (Salisbury, 2003). Salisbury provides details of the level of parasitism observed thus far for each species, with *T. setifer*, the smaller gregarious parasitoid, accounting for up to 7% of Lily Beetle larvae, and *L. errabundus*, a larger solitary species, accounting for up to 23% of larvae. It is likely that both species of wasp, which have been found in a number of counties, are now as widespread as their host. On the basis of current knowledge, it would appear that, should the current status quo between the Lily Beetle and the Snake's-Head Fritillary change in favour of the pest species, predation by parasitic wasps would not be enough to significantly protect the fritillary populations.

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Poetry by Robert Hoare

Robert Hoare is an entomologist who is currently revising *Hierodoris*, a genus of moths endemic to New Zealand. He is also a poet of not inconsiderable talent whose offerings tend to appeal to those who enjoy a particular brand of cerebral amusement! Robert's latest piece can be understood by those appraised of the following abstruse facts:

1. *Muehlenbeckia* is a genus of vine in the family Polygonaceae, with several species in New Zealand.

2. *Morova subfasciata* is a moth whose larvae make galls on this vine.
3. This information is contained in *Butterflies and Moths of New Zealand* by George Vernon Hudson.
4. *Hierodoris* is a genus of moths endemic to New Zealand, currently being revised by R.J.B. Hoare.
5. *Hierodoris illita* is a common species of *Hierodoris*, which is normally reared from stems of *Coriaria arborea*, an endemic shrub known to the Maori as 'tutu'.
6. *Hierodoris illita* has once been reared from galls on *Muehlenbeckia.*
7. The Slow Loris is a primitive south-east Asian primate.

Got that? Good.

The Galling Problem

On twigs of *Muehlenbeckia*
I find a gall, or swelling:
"What lives inside?" (I hear you cry)-
There is no way of telling.

"Oh yes there is-" (I hear you shout)-
"Before you put the spuds on
Just go into the library
And look it up in Hudson!"

I go; I look; I see that George
Declares it is *Morova*
That finds the humble native vine
Delicious as pavlova.

"Oh yes, oh yum," (I hear you squeal)-
"We all agree with Georgie,
And now you mention it, let's have
Our own pavlova orgy!"

"Hold on, hold off!" I interrupt,
"You greedy little creatures!
This *Muehlenbeckia* affair
Still has some curious features...

"For instance, though my mind is old
And slow as any loris,
I noticed that one gall I kept
Produced a *Hierodoris* !"

"Oh nay, oh no!" (I hear you groan)-
"You're forcing us to teeter
On disillusionment's dark brim:
Don't say it was *illita* !"

"Oh yes, oh yeah!" I proudly say,
"You've named the very species!"
You still demur: "But had it fed?
And was there frass or faeces?

"We only ask," (you now explain)-
"Since in the Auckland area,
illita lives exclusively
In stems of *Coriaria* !"

"Indeed," I hasten to agree,
"The thought is rather charmin':
Each larva in its tutu tube
Like Tutu-Tutenkhamen.

"But ah, what if-" I speculate
"That tutu were to tighten?
A lad'd leave a tube too tight
If that lad were a bright 'un.

"He'd leave his too tight tube behind,
His tutu tube-time over;
What choicer new non-tutu tube
Than one chewed by *Morova* ?"

You turn away and huddle up,
"Let's go!" (I hear you mutter)-
"Our time is too too wasted here-
We're dealing with a nutter!"

Many thanks to Gordon Ramel for obtaining kind permission from Robert to reproduce his work, we look forward to seeing more of this! Ed.

Unusual prey for the Wasp Spider *Argiope bruennichi*

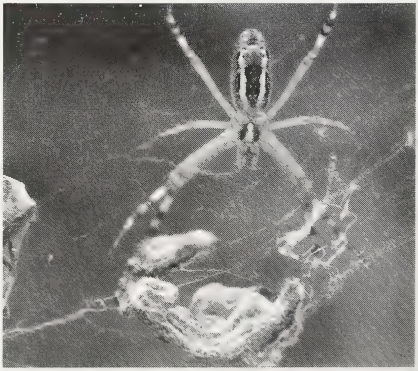
by Anthony Darby

36 Newton Crescent, Dunblane, Perthshire, Scotland FK15 0DZ.

Last July I spent an enjoyable two weeks in Arles sur Tech, France. The Tech valley is the most southerly valley in France, about 15 minutes from Spain. The Gîte we stayed in had a large pasture which was an excellent haven for butterflies, grasshoppers, mantids and spiders. One species which was especially common was the Wasp Spider *Argiope bruennechi.* Normally this species catches flying or jumping insects, but one day I came across one individual that had caught a lizard. I was not able to identify the species, but as *Podarcis muralis* was very common everywhere, I assume it was that.

I enclose pictures of *Argiope bruennichi*, the spider with its prey, close up of the prey and later that day after it had been sucked dry.

My thanks to Dom and Kim Manley of Mas Manyaques, Arles sur Tech, Longuedoc, France for allowing me to roam.



A Most Interesting Spider

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke-on-Trent, Staffordshire, ST3 7AY.

On 14th July 2002, while doing some gardening, I disturbed a spider, which I had not seen in my garden for some years. The spider in question is the species *Enoplognatha ovata* Clerck. It was once very common in my garden. The memories came flooding back of my schooldays, when I collected this spider species for the insect vivarium at school. All sorts of invertebrates were collected for the vivarium. I remember taking around half a dozen female spiders of *E. ovata*, with their bluish egg sacs. These were guarded under the cover of a slightly rolled leaf. A number of colour forms occur in this species.

After a few days in the vivarium, some of these rolled up leaves containing females with eggs sacs by accident maybe moved closer to each other. Then some bitter battles ensued amongst the females. If one female wandered on to the leaf of another, the occupant would turn her abdomen to face the intruder. Her hind legs would produce a kicking motion. This was sometimes enough to see off the intruder. Sometimes the intruder was not deterred. Possibly the intruder thought the occupant's eggs were also hers? Then a fight to the death would occur. Biting of the legs often started these fights, then full scale battle. Often fluid exuded from legs and abdomen, through biting. Often the victor walked away only to die a short time later of her wounds. On rare occasions, the female was seen guarding two egg sacs after a battle. Then, a day or so later, only one was present again. Maybe she was unable to cope with two egg sacs? No doubt this species of spider and other arachnids have most interesting life styles. A lot can be learnt about these creatures in captivity.

* * *

Large White Butterfly, *Pieris brassicae*, Attracted to a Home-made m.v. Light Trap in the Garden

by Jan Koryszko (6089)

3 Dudley Place, Meir, Stoke-on-Trent, Staffordshire, ST3 7AY.

Over the past few years, Derek Heath and myself have experimented with a number of home-made moth traps, with differing light fittings. On the evening of 10th July 2003, in Derek's garden at the Meir, we set up a home-made mercury vapour (m.v.) light trap. The trap consisted of an m.v. bulb fitted in a spot-light fitting. The spot-light was connected up to the mains supply in the kitchen. It shone through the kitchen window, which was covered outside with a white sheet.

The first three visitors came as a surprise to us. First came a hedgehog, followed by a tomcat. Then, from out of the blue came a Large White, *Pieris brassicae* (Linn). It flew in quite strongly to the white sheet. I captured it and could see it was a female. I took her to a dark spot in the garden some hundred yards away, but within minutes she returned and sat under the window. It was a moonlit night. We wondered if she was migrating, moving at night, or had we just disturbed her?

On previous evenings, we had noticed some migrant species coming to light. These included Rush Veneer, *Nomophila noctuella* (D&S) and increasing numbers of Silver-Y, *Autographa gamma* (Linn). Many years ago I have had Large White, *P. brassicae* (Linn), Green-veined White, *P. napi* (Linn) and Red Admiral, *Vanessa atalanta* (Linn) at m.v. light in my own garden. I have read reports of other species of butterflies coming to light in other parts of the country. The species I am aware of are Purple Hairstreak, *Neozephyrus quercus* (Linn), Holly Blue, *Celastrina argiolus* (Linn), Small Copper, *Lycaena phlaeas* (Linn) and Painted Lady, *Vanessa cardui* (Linn). No doubt other entomologists can add to this list. We will never know whether our female Large White was migrating. I do believe, though, that sunlight, moonlight and other natural factors must help these wonderful creatures to navigate for thousands of miles. These factors still remain an enigma.

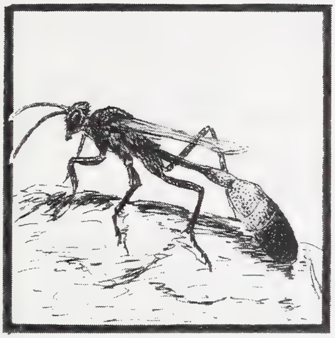
Diary Date...Diary Date...Diary Date

2004 EXHIBITION AND TRADE FAIR

Saturday 2nd October 2004

Kempton Park Racecourse
Staines Road, Sunbury, Middlesex

Diary Date...Diary Date...Diary Date



ANNOUNCEMENTS, REQUESTS AND REPLIES

Closer ties with the Royal Entomological Society

The Registrar, Nick Holford has been working very hard to forge a closer link with the RES. There will be more information about this exciting development in future *Bulletins.*

Fuller's Earth and the AES Forum

Recent discussion on the AES Forum (http://groups.yahoo.com/aes) has been around degreasing papered butterfly specimens. Since there have been requests for information on this topic within the pages of the *Bulletin*, it seems pertinent to summarise the discussion. Names are not mentioned, as most members posting their comments use only first names!

Fuller's Earth is recommended in several forms. The cheaper (dusty grey) cat litters are apparently usually Fullers Earth granules – you'll need to crush it up but it is probably the cheapest way of getting hold of it. Fuller's Earth is also used for Chinchilla dust baths! It is apparently 60p for a small box from Boots. Fuller's Earth is also used by fly fishermen. For this purpose, it is mixed with washing up liquid to make a paste and is then wiped along the nylon line to degrease it. This enables the line to sink rather than float in the surface film.

Bill Oehkle on the 'World's Largest Saturnidae Site' suggests 24 hours in Acetone, and then shorter (15 mins) spells if this is not enough. Acetone (Propanone) degrades fatty tissue, so care is needed. Specimens also need to be fully relaxed afterwards. The late Bob Watson used a series of jars of Carbon tetrachloride, where the specimen was transferred to successively newer solutions. Carbon tetrachloride may be unavailable, for carcinogenic reasons.

Much of this information was supplied by Anthony Darby, who has contributed to the *Bulletin* on several occasions.

Nature Navigator – a new online guide to British Wildlife

The Natural History Museum launched an online guide to British wildlife and biodiversity at the end of last year. The site is at www.nhm.ac.uk/naturenavigator and is aimed at "children, students, gardeners, wildlife enthusiasts and anyone else who wants to explore the richness of Britain's wildlife". The site covers 8,000 species and has links to other organisations. It is illustrated with paintings and drawings from the Museum's collection.

The site appears useful and is well worth a look. It was funded by the New Opportunities Fund and is included in the EnrichUK network (www.EnrichUK.net).

Project Kerkini

Project Kerkini attempts to generate a biodiversity list for the Kerkini Nature Reserve in Greece. Kerkini Nature Reserve is a RAMSAR Site, centred on a Lake Kerkini in Northern Greece. The reserve includes parts of two mountain ranges, one with 2,000 metre peaks and an Alpine Zone, the other with 1,000 metre peaks and trees. In between is the lake and two rivers creating between them a wide variety of wetland habitats.

At present there are two malaise traps running, and Roy McCormick, author of the *Moths of Devon*, is currently using two moth traps to record the diverse moth fauna at the Reserve. The project is supported by a loan from the Netherlands, and over a dozen European scientists working, all voluntarily, to build up a picture of the biodiversity of this rich site.

Any experts who would be interested in collecting here can be offered free accomodation, but not food, and transport around the site in exchange for records, and where possible identified material by Gordon Ramel, a resident British entomologist. Facilities include access to both low and high power microscopes, a generator and a light trap. Contact Gordon on g.ramel@earthlife.net using the words Project Kerkini in the subject.

* * *

Book Reviews

North West Wales Moth Report 2001

Compiled and published by John Harold, Hen Ardd, Carreg y Garth, Rhiwlas, Bangor, Gwynedd, LL57 4HD. p113, A4 format, comb bound, suggested price £4.00.

The report covers the Watsonian Vice-Counties of Merionethshire (VC48), Caernarvonshire (VC49) and Anglesey (VC52). My first impression of this impressive 113 page report, which covers just a single year, was that it would be very ambitious to attempt to publish future reports to the same standard. However, as the author explains in his covering letter, the long term aim is to produce a distribution atlas for each of the Vice-Counties, and a function of the first report is to set a standard of recording, as well as to encourage more recording in the future.

The author has sensibly followed all the generally accepted conventions, such as using Vice-Counties as definitive areas, and Bradley and Fletcher numbers. Each of the 700-odd species is listed with its B&F number, scientific name (but not author or date) and this is followed by the English name from Bradley and Fletcher or, for Micros, from Jim Porter's recently circulated list. Each species' record is split into three sections covering the three Vice-Counties. The place of capture is given, the map reference and the method of capture where this is known. This is followed by the date and the initials of the captor.

One easily-made mistake which was noted concerns the Plume-moth 1511 *Merrifieldia tridactyla*, which is presently known only from the Burren in Ireland and the Lizard peninsular in Cornwall. The records in the North West Wales Moth Report almost certainly refer to the nearly identical and much commoner *M. leucodactyla*. This species was previously called *tridactyla* but in 1997 Gielis discovered that the type specimen was in fact the rarer species. So the name *tridactyla* has, in effect, moved to the rarer species, and the commoner species inherited the next available name, which is *leucodactyla*.

Jim Porter and I have tried to reflect this in the vernacular names for these two insects.

An abbreviated taxonomy is:

Merrifieldia Tutt, 1905	
leucodactyla ([Denis & Schiffermuller], 1775)	Thyme Plume
tridactylus auct., (nec Linneaus, 1758)	
tridactyla (Linneaus, 1758)	Western Thyme Plume
fuscolimbatus (Duponchel, 1844)	
icterodactylus (Mann, 1855)	

The book would have benefited from a little more proof reading as some of the names have been mis-typed and some spaces have been lost. However, these mistakes are rare and in no way detract from the usefulness of the publication. The report succeeds in its aims of providing a snapshot of the moth status in 2001 and acting as a foundation for future recording. We look forward to the distribution atlas which is its eventual aim.

Colin Hart

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As Borboletas de Portugal – The Butterflies of Portugal

Edited by Ernestino Maravalhas, 2003. Published by E. Maravalhas. 455 pages. Softback. ISBN 972-96031-9-7. Price: 50 EUR. Available from Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark.

At last, the first book ever printed on the butterflies of Portugal is out! It is published by the Portuguese lepidopterist Ernestino Maravalhas, after 25 years studying our country's fauna. This wonderful work had contributions from several Portuguese and foreign biologists, lepidopterists, conservationists and nature photographers. The text is in Portuguese but there is an English abstract for almost every chapter and English captions to the photos can be found at the end of the book. The book is lavishly illustrated with more than 700 photos and drawings, 24 colour plates and 140 distribution maps.

Chapters cover the history of lepidopterology in Portugal, introduction to insects, the evolution of butterflies, the biology of butterflies, predators and parasites, migration, butterflies and man, butterfly biotopes, ecology and butterflies, butterfly conservation, genetic analyses, cartography of butterfly diversity in continental Portugal, butterfly recording and monitoring, studying butterflies, the flora of Portugal, monography of the butterflies of Portugal, monography of the butterflies of Madeira and Azores, plates of set specimens and a glossary. In the monographic sections each species is covered on a single page with photos of live specimens, photos of the habitat, a distribution map, description, biology, European status of the species, Portuguese status, conservation issues, similar species and selected bibliography.

The book is a new and refreshing departure from the traditional field guide type and, as far as I know, is different from anything else published. It would be a very nice addition to anyone's library and, in particular, to those fellow members of the AES who like to come to Portugal, some of them year after year, and that are genuinely concerned with butterfly and nature conservation in Portugal. Following the publishing of this book a new and active butterfly conservation association – TAGIS – named after the Portuguese dappled white, has already started in Portugal. The web site is http://www.tagis.net (text is in Portuguese but it is intended to be also in English soon).

Review by F. Santos Carvalho (3807)

AES Publications

Amateur Entomologists' Society

PRACTICAL HINTS FOR THE FIELD LEPIDOPTERIST
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of the Amateur Entomologists' Society

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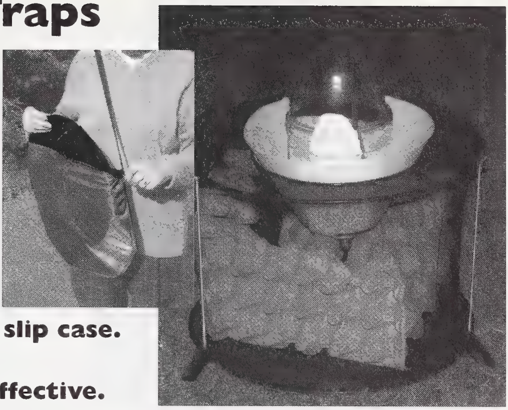

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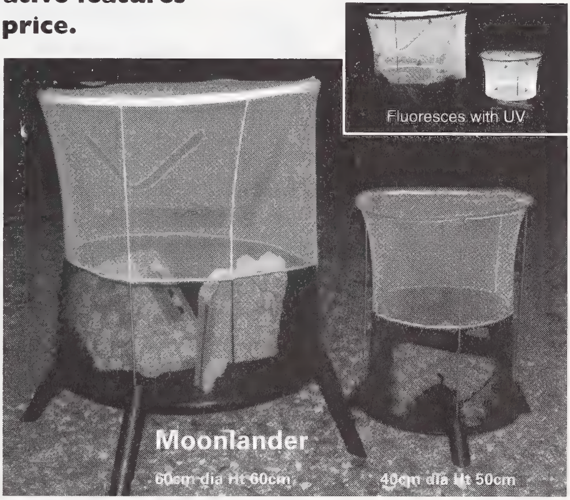

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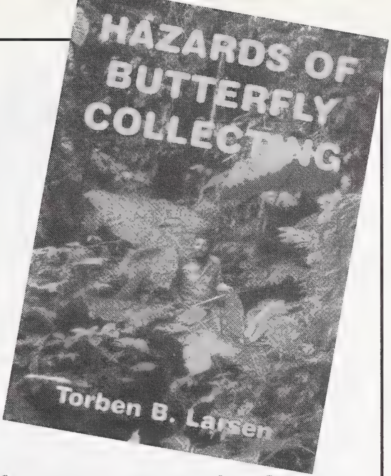

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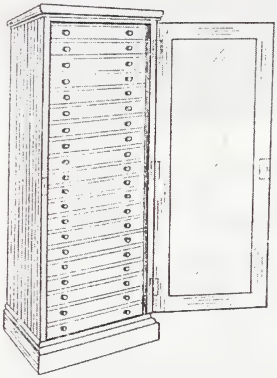

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Editorial

Sitting here with the dining room light on, at 4 p.m. on a stormy Friday afternoon in August, seems to epitomise the extraordinary weather that we have experienced this summer. After a sunny morning, the sky is now the darkest shade of slate blue, and the wind has dropped in this ominous lull before the storm. The enormous congregation of wasps that had terrorised my wife and the inhabitants of the Cherry Laurel bush all morning have now disappeared, and in the breathless humidity, a Small White Butterfly is fluttering about in what appears to be a state of panic.

As always there are winners and losers in the ongoing lottery of successful metamorphosis vs. weather conditions, and this years emphatic winners appear to be the hoverflies, whose populations have reached newsworthy proportions as they attempt to share beach space with holidaymakers at coastal resorts. (The light above flickers as the first electric discharge imprints a blue river delta on the back of my retina, which re-establishes itself with each blink.) Last years winners were the butterflies, which had, according to records gathered, "the best year since 1997 and the 10th best since recording began in 1976" (Bowles, N. and Fox, R., in Wildlife reports, *British Wildlife*, **15**, p. 359). This will hopefully be reflected in numbers recorded this year, provided that the weather hasn't had too much of an effect on their development. Certainly, it has been an excellent year for Orthoptera, and drivers fortunate enough to hit the grid-locked northbound section of the M25 between the M3 and M4 turnoffs may have noticed the loud summer chorus of Great Green Bush-crickets as they crawled past Wraysbury Reservoir. (The Small White now clings to the wooden fence as the first large raindrops tap loudly on the open patio doors.) I am also aware of some excellent discoveries by a number of entomologists this year, and I am hoping that these good fellows will find time to put pen to paper over the coming months. As a Society that embraces the great tradition of the amateur entomologist, we welcome all contributions, from the simplest noteworthy observations, hints, useful tips and illustrated notes, to poetry describing the wonders of the insect world and articles which cater for the specialist. And why not? We are here to enjoy all aspects of interest! (The patio is now an inch deep with water and each peal of thunder visibly shakes the fence and its bedraggled residents.)

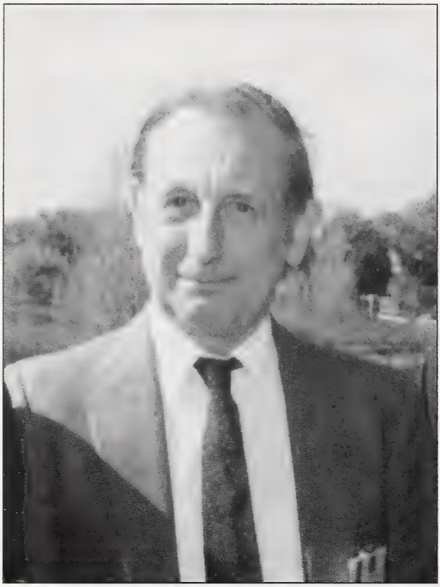

Figure 1. Mr Alan Stubbs, worthy recipient of the Marsh Award for Insect Conservation.

The Amateur Entomologist's Society has played an important role in the lives of many entomologists, and it is noteworthy that some of our most gifted entomologists have come up through the ranks of this Society. It was also pleasing to see that the considerable effort and determination of an ex-President of the Society, Mr Alan Stubbs (Figure 1), has been recognised by the Royal Entomological Society (Marsh Award for Insect Conservation, *Antenna*, **28**, pp. 152-153). Over the past 40 years, Alan Stubbs has made an exceptional contribution to the field of insect conservation, and was a founder member of the Joint Committee for the Conservation of British Insects (JCCBI), which is now known as Invertebrate Link. He played a pivotal role in the post Rio Earth Summit development of an invertebrate species list for the UK Biodiversity Action Plan, and recently, was the originator of, and driving force behind the establishment of Buglife – The Invertebrate Conservation Trust (which is proudly supported by the AES).

In recognition of this work, which has seen the profile of insect conservation raised from "a low priority peripheral issue to a major factor in the conservation of wildlife at a national and statutory level", and ensured that "insect conservation will have a strong and permanent voice in statutory conservation, in policy and in practice far into the future", Alan Stubbs has received the Marsh Award for Insect Conservation.

The AES would like to sincerely congratulate Mr Stubbs on this outstanding achievement, and thank him for his considerable contribution to the field of invertebrate conservation.

Peter Sutton

Odd volume for a quid – obscure and curious items of entomological literature, part 9

by Richard A. Jones

135 Friern Road, East Dulwich, London SE22 0AZ.

bugmanjones@hotmail.com

A continuing series of some strange books that have found their way into my library. Not useful key works by important entomologists, but strange oddities, quaint, off-beat or just plain entertaining.

Cassell's natural history **edited by P. Martin Duncan, London, Cassell, Petter, Galpin & Company, 1883.**

I only have the last of this handsome six-volume series, but I didn't hesitate for a moment to pay the £1 price penciled onto the half-title page. The end of the 19th century was an exciting time in publishing – paper was getting cheaper, printing machines were getting larger and faster and more cost-effective and the reading middle-class public was burgeoning. This was a time of terrific out-pouring from all the large publishers; Cassell was one of the largest and natural history was a major topic in all the book catalogues. These multi-volume series were very popular and were well produced and well written. They usually had attractive covers, only cloth, but decorated with gold blocking and other colours to mimic ornate leather bindings.

I was particularly lucky with volume 6 because it was all on invertebrates, from Hymenoptera to Infusoria. One of the most striking things about the book was its splendid engravings, hundreds of them. Many of them are as good as illustrations you could find today in identification guides and technical monographs. The individual veinlets of a dragonfly's wings are clearly and accurately portrayed; the sheen on the flea's back is almost photographic in its delicacy, and the fineness of the outline of the many-legged *Scutigera* (a very-long-legged centipede) is almost mesmorizing. Even in black and white, the butterflies and moths are very delicately reproduced and their caterpillars very life-like and three-dimensional. The puss moth caterpillar looks like it is about to crawl of the page. Some are of 'set' museum specimens, others are drawn from life, on twigs, flowers and leaves.

There are a few oddities, for the sake of scientific illustration rather than strict adherence to scientific accuracy. A whole-page plate shows at least 15 species of flies and ichneumons all crammed together in a most unlikely array as they jostle on hogweed leaves and flowers and nearby tree trunk. It may not look quite 'natural', but it serves to show all these insects in a tight space. One ant lion is just visible as a pair of jaws peeking out from its pit, whilst another nonchalantly strolls across the surface of the sand (highly unlikely behaviour) and an adult hovers just over their heads. Some fly bugs (*Reduvius personatus*) scuttling across the garret floor look strangely out of proportion to the corner of the window frame and take on the menace of some giant six-legged rodent.

Some of the engravings are works of art in themselves though. The plates of the spiny lobster and sea anemones would not look out of place framed above a fireplace. My favourite, however, is the leaf-insect *Phyllium siccifolium*. Whilst adult and nymph disport themselves on leaves in the foreground and another is in full flight at the top of the page, my eye is drawn to the distant background where shaded by majestic palm trees is a domed and minaretted palace full of eastern mystery.

* * *

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Alternative larval foodplant for the White Admiral *Limenitis (Ladoga) camilla*

Dr Alan Butler (7903)

10 Springfields, Towcester, Northants, NN12 6UU.

I have recently been rearing the White Admiral *Limenitis camilla* and thought it might be of general interest to let people know that I have found an alternative larval foodplant to honeysuckle.

Whilst honeysuckle is generally available, currently I do not have established plants in my garden, and the nearest available source is about 15 minutes away. I was also concerned that a lot of the garden honeysuckle in my local area appears to suffer from mildew and although I have no personal experience that this has been detrimental to the welfare of the larvae, it is certainly not desirable. I therefore decided to try the young larvae on snowberry and found that they readily switched to this alternative, even when given a choice between this and their natural foodplant honeysuckle. I then found that even freshly emerged larvae will take readily to snowberry, and I have now successfully reared larvae through from ova to healthy adult. Some of the larvae were subjected to a lengthening day length regime which produced a second brood with adults of a good size typical of first brood butterflies.

Snowberry happens to be a good choice for me because it grows in abundance in local parkland areas and is therefore easily available. It also seems to be more resistant to mildew. I have found that the larvae (including the final instars) prefer the small leaves on old stems to fresh fleshy growth on new stems. This is handy because the small leaves also keep better as a cut larval foodplant than the larger leaves. In my experience snowberry also keeps rather better than honeysuckle once cut, either standing in water or in plastic boxes. Larvae form their hibernacula in snowberry in exactly the same way as they do with honeysuckle, folding the leaf around themselves and attaching the chosen leaf to the main plant stem to prevent this from detaching during the winter.

I guess the next challenge will be to see whether captive *camilla* will lay on snowberry. This will be especially challenging since it seems hard enough to get them to lay on their natural foodplant!

I would be very interested to hear from any members who already have experience of alternative foodplants for *L. camilla.* The idea to try snowberry came from the knowledge that the Marsh Fritillary *Euphydryas aurinia* will take snowberry as well as honeysuckle as an alternative to their natural foodplant.

Musk Beetle *Aromia moschata* (L.) (Coleoptera: Cerambycidae) recorded from a garden in Camberley, Surrey

by Dr Richard Sutton

36 Watchett's Road, Camberley, Surrey, GU15 2PB.

On the afternoon of Friday 30th July 2004 at 4pm in our back garden, my two and a half year old son William shouted "Look daddy, look!" and pointed in the direction of a large flying insect that promptly landed on the patio. This huge insect, which was metallic green with electric blue antennae, was almost two inches long and was the unmistakable and nationally scarce Musk Beetle *Aromia moschata*. Photographs of the specimen (Figure 1) were taken using a digital camera (Casio QV-R40).

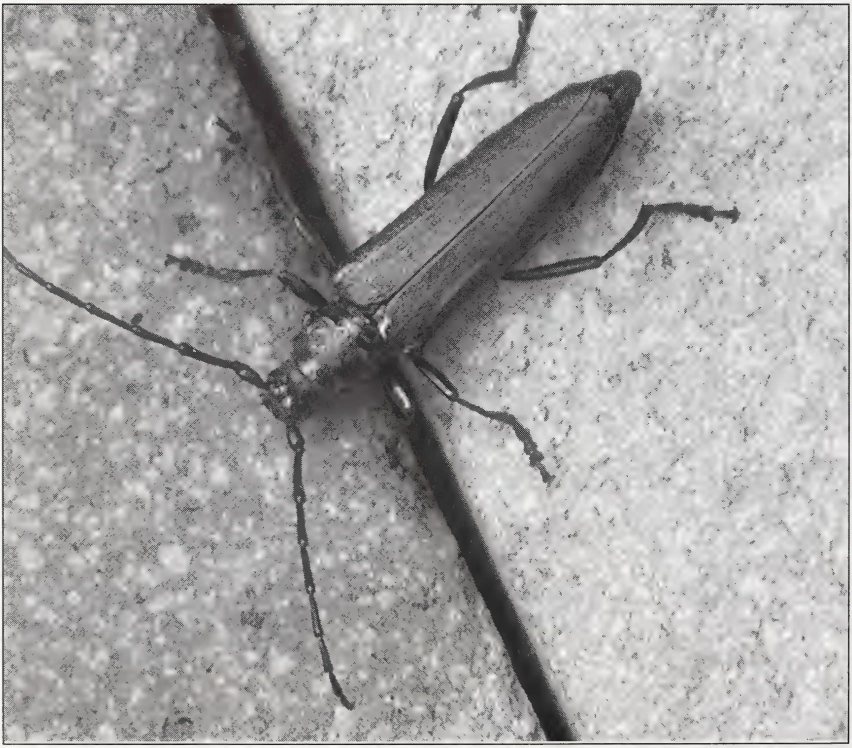

Figure 1. Musk Beetle *Aromia moschata* found in a Camberley garden.

A few minutes later, a Six-spot Burnet Moth *Zygaena filipendulae* (Figure 2) also landed in the garden. Our garden is situated in a fairly busy town, but Camberley is also quite close to wetland habitats associated with the River Wey, and the dry grassland habitat of Old Dean Common. We regularly see large flying beetles in the garden, including Cockchafers *Melolontha melolontha* and Stag Beetles *Lucanus cervus*, but we did not expect to see such a spectacular wetland species find its way into our suburban garden!

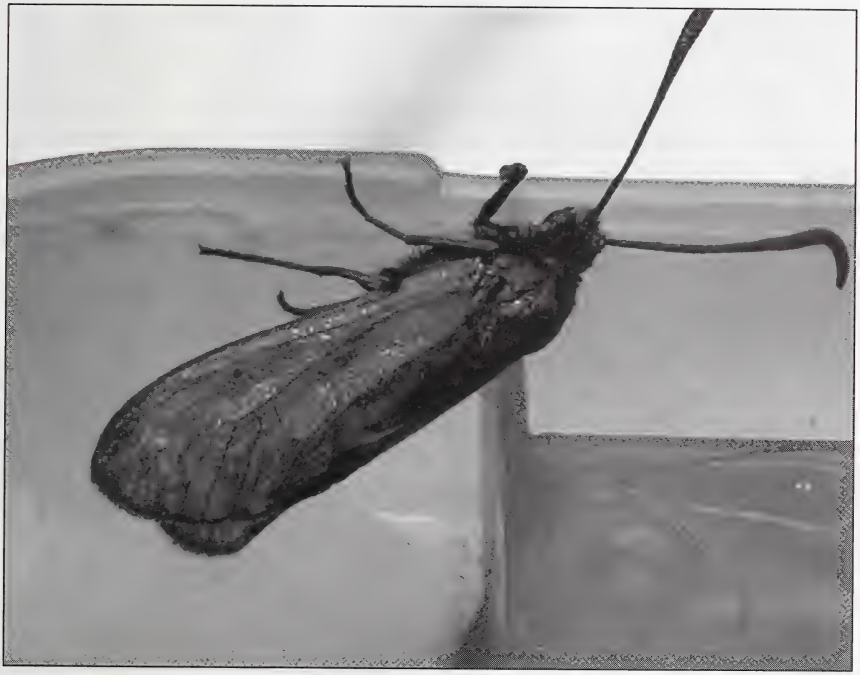

Figure 2. Six-spot Burnet Moth *Zygaena filipendulae.*

The distribution map (Twinn, 1999) shows that the record represents a new 10 km square (SU 86) for this species, but it is likely that the specimen originated from the two adjacent post-1970 10 km squares (SU 96, TQ 06) where suitable willow (*Salix* spp.) habitat exists along the River Wey.

Reference

Twinn, P.J.F. and Harding, P.T. (Eds.), (1999), *Provisional Atlas of the Longhorn Beetles (Coleoptera, Cerambycidae) of Britain*, Huntingdon: Biological Records Centre.

Recently found old records of the Alder Leaf Beetle *Agelastica alni* (Linnaeus 1758)

by Keith C. Lewis (3680)

Top Flat, 108 Park View Road, Welling, Kent, DA16 1SJ.
E-mail kc.lewis@btinternet.com

Introduction

The Alder Leaf Beetle (Figure 1) is 6-8 mm long, the upper side being violet or blue with the under side blue-black. The tibiae, tarsi and antennae are all black. The thorax has rounded posterior angles and is without depressions on the disc. Elytra are much dilated behind. The scutellum is triangular and pointed. The beetle is found commonly in parts of central Europe except at high altitudes, but is now considered to be extinct in the British Isles. The larvae and adult beetles can be found in Europe feeding mainly on the leaves of Alder *Alnus glutinosa.*

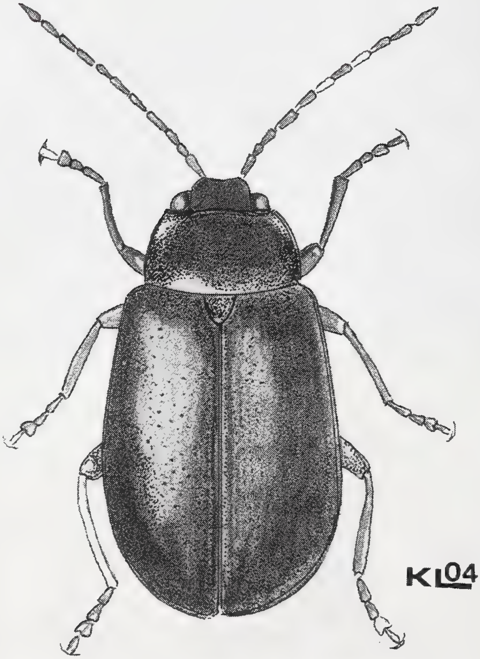

Figure 1. The Alder Leaf Beetle *Agelastica alni.*

During the 2002 AES Exhibition held at Kempton Park Racecourse I was fortunate in obtaining part of the Coleoptera collection, amounting to some 2,500 beetles, collected by the late Henry George Colley 1898-1963. Mrs Celia Porter kindly gave me the other 2,000 Colley beetles at the 2003 AES Exhibition that had been purchased by her husband. Personal communication with Colley's son informed me that the store boxes of beetles had been stacked in a bedroom wardrobe since his father's death in 1963. It is therefore surprising that so many insects survived the ravages of the museum beetle and were found to be in a fairly good condition after a lapse of forty years. To date I have been unable to find any reference in old membership lists that H. G. Colley was a member of a natural history society or that he published any papers or notes on Coleoptera or Lepidoptera which was, I'm informed, his first interest. This is no doubt why we can find no published records of *Agelastica alni* (Linnaeus), a very rare, now possibly extinct, beetle in the British Isles that he found a number of times between the years 1926-1958.

British Museum collection

The map plots in Figure 2 show the two British Museum beetles that I found in their British collection. These were found in 1868 by A. H. May from Grays and Rainham districts of Essex, both examples bearing identical data labels. The other examples of *Agelastica alni* found in the British Museum drawer unfortunately have no collecting data apart from the names, W. A. Power B.M.1896-69, E. G. Champion, Stevens, B.M. 1964-540 and Sharp, B.M. 1932-116. These collectors may have found the beetles, or they were obtained through purchase, or exchanged from other coleopterists, their total collections being later donated to the British Museum after their deaths.

Henry George Colley collection

The map plots in Figure 3 show the three beetles found by Colley near Chorleywood, Hertfordshire, May 1926; one beetle found near Watford, Hertfordshire, July 1926; one beetle found near Watford, May 1930; and one beetle found near Rickmansworth May 1946. If one considers the cluster of records on this map it is possible that *Agelastica alni* could have survived through the five years 1926 until 1930. The later May 1946 beetle being unsuccessful in establishing itself due to the extremely cold weather, 1946 being one of the coldest winters on record.

The map plot in Figure 4 shows the beetle found by Colley at Charmouth, Dorset, 11 June 1958.

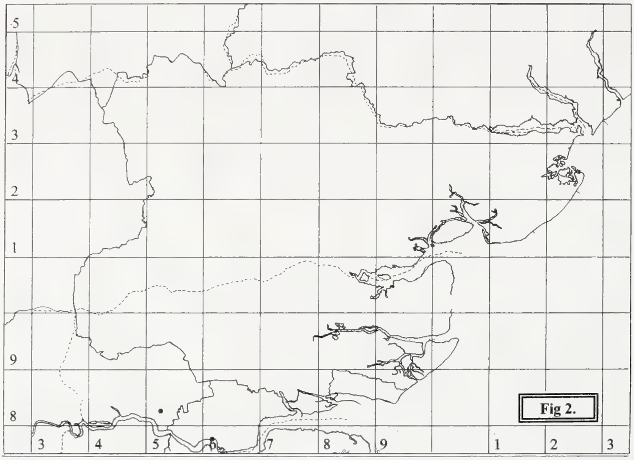

Figure 2. *Agelastica alni* (Linnaeus) from Grays and Rainham District, Essex. A.H. Collection. In British Musuem coll.

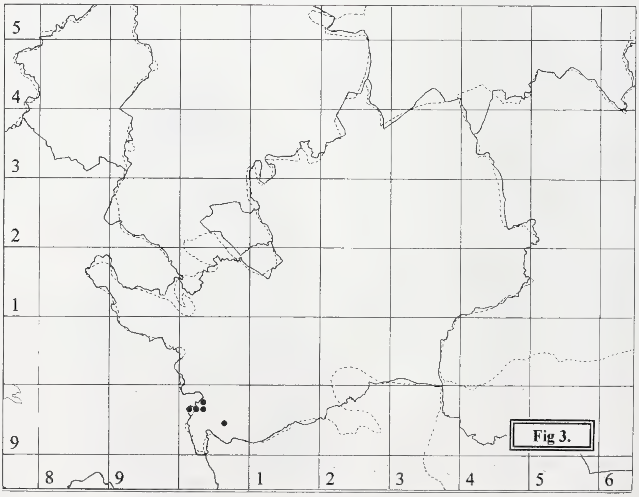

Figure 3. *Agelastica alni* (Linnaeus) from Watford, Chorleywood and Rickmansworth, Hertfordshire. 1926, 1930 and 1946. H. G. Colley Collection.

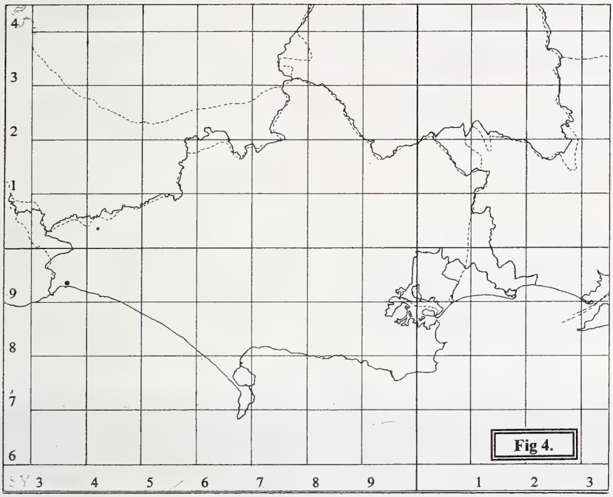

Figure 4. *Agelastica alni* (Linnaeus) from Charmouth, Dorset.
H. G. Colley Collection.

Colley's logbook/journals

I was also fortunate in obtaining three of Colley's logbooks/journals although they are difficult to interpret with some records being duplicated in all of the books. Also he apparently designated the same catalogue number (written on all the label's undersides) to beetles found on the same day's collecting trip, irrespective of genus. These were then added to these books completely out of number sequence. This has now been simplified by my re-typing the entire entries in catalogue number sequence order and placing them on computer.

Note: two of the Colley beetles found at Chorleywood Hertfordshire May 1926, were given to the British Museum during my visit to the Coleoptera department 24 June 2004.

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Lepidoptera at Las Descargues, Gorses, Lot Valley, France, 19-29 August 2003

by Paul Waring (4220) & Rachel Thomas

Windmill View, 1366 Lincoln Road, Werrington, Peterborough, PE4 6LS.

Introduction

If you fancy a vacation in the South of France in a rural area with woodland, meadows, and mountains and moth-trapping gear on hand, we can recommend you stay at Robin Howard's gite (Figure 1), in the hamlet of Las Descargues, near the village of Gorses, in the Lot valley (Plate 1).

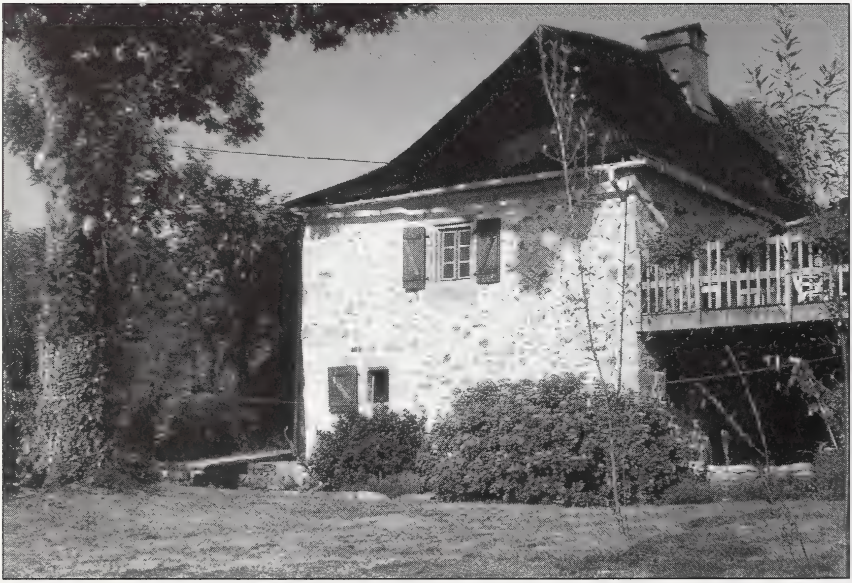


Figure 1. The gite at Las Descargues, Lot, France, August 2003.

Robin (Figure 2) is perhaps best known to moth enthusiasts as one of the compilers of the data collected from National Moth Night and for his moth recording work in Cornwall. Staying at his gite offers the chance of seeing moth species which are nationally scarce or rarer in Britain and of course some species that do not occur in the British Isles. Among the former we saw on our visit from 19-29 August 2003 the Essex Emerald *Thetidia smaragdaria*, Portland Ribbon Wave *Idaea* *degeneraria*, Tawny Wave *Scopula rubiginata*, Lace Border *Scopula ornata*, Scarce Hook-tip *Sabra harpagula*, Clay Fanfoot *Paracolax tristalis*, Spotted Sulphur *Emmelia trabealis* (Plate 1), Toadflax Brocade *Calophasia lunula*, Speckled Footman *Coscinia cribraria*, Small Black Arches *Meganola strigula* and the formerly resident Black V Moth *Arctornis l-nigrum*. Many species that reach the British Isles as immigrants appear to be resident at Las Descargues including the Pale Shoulder *Acontia lucida* (Plate 1), Scarce Bordered Straw *Helicoverpa armigera* and Dumeril's Rustic *Luperina dumerilii*. Moths we saw here but which have not been recorded from the British Isles included the geometrid *Adactylotis contaminaria* (Plate 1) and the noctuids *Epizeuxis calvaria* and *Hoplodrina respersa*.

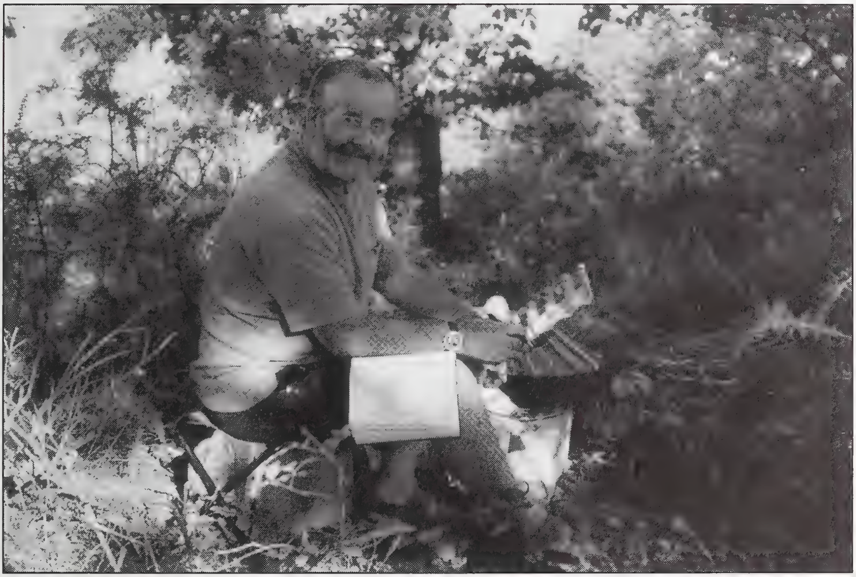


Figure 2. Robin Howard with moth-trap in wooded gorge by Las Descargues, Lot, France, August 2003.

Location and weather

Las Descargues is situated at N 44°46'43.9" E 001°59'48.1" above the Bave Valley between St Cere and Figeac in the Lot, at altitude 538 m above sea level. It is one and a half hours by car from the airport at Rodez, and Ryanair operate a direct flight to Rodez from Stansted Airport with ticket prices as low as £30 return to over £100 in high season.

The gite, with swimming pool, is located amongst several agricultural dwellings surrounded by permanent grassland with trees and shrubs in the garden (Figure 1). There is a wooded gorge within five minutes walk, in which the main tree species are Sessile Oak *Quercus petraea*, Sweet Chestnut *Castanea sativa*, Ash *Fraxinus excelsior* and birch *Betula* sp., with an understorey of Gorse *Ulex europaeus*, Broom *Cytisus scoparius* and Hazel *Corylus avellana*. The ground vegetation in the woodland has a heathy component, including Ling Heather *Calluna vulgaris* and Bell Heather *Erica cinerea* and various mosses. Nearer the gite there is a more calcareous influence with Hemp Agrimony *Eupatorium cannabinum* in seepages. In the surrounding mountains the woodland and scrub includes much Box *Buxus sempervirens* and Juniper *Juniperus communis*. Soapwort *Saponaria officinalis* and various mulleins *Verbascum* spp. were frequent and Golden-rod *Solidago virgaurea* noted. Both Golden-rod and Soapwort were searched, including after dark at Lac Tolerme (on 26th August) for larvae of the Cudweed Shark *Cucullia gnaphalii* and Bordered Gothic *Heliophobus reticulata*, respectively, but none was found.

While we were there the area was experiencing a long hot summer drought, so severe that many of the broad-leaved trees had entered into autumn colours and had dropped large numbers of leaves prematurely. There were literally droves of recently fallen leaves on the woodland floor. We had thunder and rain on our first night, the first in weeks, followed by several days of pleasantly cooler weather, with daytime maxima in the high 20s and low 30s, rather than upwards of 35°C which had preceded our arrival and to which temperatures soon returned. Generally the weather was warm and sunny throughout our stay.

Recording the Lepidoptera

This was a family holiday with lots to do by day, but on most nights a Robinson trap was operated in the garden and two Robinson traps from a portable generator in the wooded gorge. The accompanying Table shows the list of moths we recorded. We were particularly interested to see the Essex Emerald, the first PW had seen in continental Europe. The single male individual, captured on 21 August, was rather worn, but unmistakable, with a conspicuous central spot and golden leading edge on the forewing. It was presumably a second generation individual at this date, and the first Robin had seen in August. The moth usually occurs there in June and early July. It was captured in the garden, which included some weedy borders of native plants such as

Groundsel *Senecio vulgaris,* sheltered by mainly exotic trees and shrubs, surrounded by open arable and grass fields. The large numbers of Pale Shoulder were also of special interest because the species has appeared in Great Britain as an immigrant on a number of occasions in recent years. Our visit provided the opportunity to see something of the habitats in which the moth breeds. While we expected it to be along the borders of unimproved fields, it was evidently also penetrating along the paths through the woodland because we caught half a dozen or more per trap-night amongst the trees.

Wine roping was employed on most evenings and succeeded in attracting an Old Lady moth *Mormo maura* in very fresh condition, the first seen in the area in Robin's two years working the site for moths, but he has been using only light traps, not baits, to which the species comes much more frequently. Our wine ropes also attracted many Dark Sword-grass *Agrotis ipsilon*; several could usually be seen per wine rope soon after dark. On several evenings the ropes were left in position all night and on one rope seventeen Dark Sword-grass had accumulated when the ropes were collected at dawn. The other frequent visitor to the wine ropes was the Large Yellow Underwing *Noctua pronuba.* Most of the other species were only occasional visitors, including the Passenger *Dysgonia algira*, Yellow Shell *Camptogramma bilineata* and the Vestal *Rhodometra sacraria.* About ten moths per wine-rope was the usual turn-out to each of the eight ropes deployed. The wine-ropes were set mainly with the aim of attracting the Crimson Underwing moths *Catocala* spp. which are a special interest of PW's, but in this we were unsuccessful, even by poplars around the pond at the nearly village of Gorses. Robin has recorded only occasional individuals: e.g. a Light Crimson Underwing *C. promissa* on 28 July 2003, and in 2002 the Red Underwing *C. nupta* 21-28 August, the Rosy Underwing *C. electa* 28 August-3 September and the Blue Underwing *C. fraxini* 2 September-26 October.

Generally the light-trap catches were small - about fifty macro-moths or fewer per trap, partly reflecting the August lull in light-trap catches which we experience in such habitats in Britain but here this was no doubt intensified by the drought. A number of large species seem to aestivate as adults in such conditions and reappear later in the summer. On a similar trip to somewhat similar habitats in the Ariege, French Pyrenees, but slightly earlier in the summer (22-31 July 1994) and at higher altitude (750m above sea level), our catches were larger and the flight season of the Light Crimson Underwing *Catocala promissa* had just started (Waring & Thomas, 1995, *Bull. Amat. Ent. Soc.*, 54, pp.124-129). I showed Robin the Ariege results, which he recognised as corresponding to the range of moths he was trapping at Las Descargues about mid-July.

Robin provided the following comments, based on his experiences over the previous two years. The Pale Shoulder (Plate 1) is present in the traps continually for a very long period during the summer. The Passenger occurs as occasional individuals in early summer, but in good numbers later on. The Vestal tends to be seen only from August onwards. Many of the smaller geometrid and noctuid moths tend to have two often overlapping generations per year and are present as adults for much of the summer, such as the Portland Ribbon Wave, Tawny Wave, Lace Border, Toadflax Brocade, Latin *Callopistria juventina*, Marbled Clover *Heliothis viriplaca*, and possibly the Beautiful Yellow Underwing *Anarta myrtilli.*

On the first evening a Convolvulus Hawk-moth *Agrius convolvuli* flew up from the garden to visit the hanging baskets of red and purple petunias well before dusk. Convolvulus Hawks proved to be regular visitors and one was seen most evenings. The same flowers attracted Hummingbird Hawk-moths *Macroglossum stellatarum* by day, these were also seen widely visiting other tube flowers including Soapwort. The effects of agricultural improvements in the surrounding meadows were very obvious. Those where there had been no agricultural improvement were easily the most productive for insects and included a wider range of species. Most obvious were the Spotted Fritillaries *Melitaea didyma*, all freshly emerged, which were photographed and later identified. The second generation was underway but these butterflies were rarely seen in the fields of improved and semi-improved grassland. Sam Howard, Robin and Sue's son, had been comparing the species richness of grass-hoppers and crickets in the various types of fields and had recorded over twenty four species, but mostly these were in the unimproved meadows. Also seen in the unimproved meadows was the day-flying Purple-barred Yellow *Lythria purpuraria*, a striking deep yellowish moth with two purple bars across the forewings.

Butterflies were not numerous and we tended to be occupied with other activities during the day so no great effort was made to record them. A few Clouded Yellow *Colias croceus* were noted, a small fritillary was found roosting after dark on a grass stem at Lac Tolerme on 26 August. It was taken for identification and later found to be the Heath Fritillary *Mellicta athalia.* The voucher has been retained. Several of a large, white-banded Grayling were seen regularly along the path by the wooded gorge when visiting the light-traps in the morning. These were either the Tree Grayling *Hipparchia fagi* or the Rock Grayling *H. alcyone* but none was captured and reliably distinguishing the two from a short clip of video film that was taken of them has proved problematic.

Other noteworthy natural history observations included a very large female toad on the first night of moth trapping; this was 15cm in length but proved to be simply a large form of the Common Toad *Bufo bufo*, a form well known in the south of France. We saw a Buzzard *Buteo buteo* regularly, often perched, along the farm-track to the gite, and a Barn Owl *Tyto alba* as we returned along it one night.

On the morning of 23 August at dawn (06.15 hrs) a pair of Hedgehogs *Erinaceus europaeus* was heard and then seen, courting outside our open bedroom window.

Apart from the local countryside, in which it is a real joy to walk or drive through, with lots of woodlands, little copses and streams in gorges too steep to farm, there are many tourist spots, quiet market towns and other places to see. We explored spectacular underground cave systems at Padirac and with cave paintings at Pech Merle. Both sites are well-lit and with helpful guides. We kept a look out for any aestivating moths in these caves but did not see any. We drove to the museum and "insect garden" (Plate 2) which has been set up around the house and statue (Plate 2, inset) at Saint-Leons of Jean-Henri Fabre (1823-1915) who first described so many of our moths and other insects. This was something of a pilgrimage for PW. He had first read about Fabre (Fabricius) via Eleanor Doorly's book "The Insect Man - Jean Henri Fabre" (Heinemann, London, 1936), having used so many of his scientific names for years, not least in the new "*Field Guide to the moths of Great Britain and Ireland*" (Waring, Townsend & Lewington, British Wildlife Publishing, 2003) completed only weeks previously. We also visited "Micropolis ", described by the French as "the city of the insects". This is a modern, indoor, interpretative display centre featuring many living and preserved insects and proving very popular with French tourists. Rocamador was notable not only for the amazing cluster of buildings set against the rock-faces, but also for the large amount of Soapwort growing around the village car-park and in broken ground nearby. All in all, it was a great family holiday with a high but generally unobtrusive level of entomological interest.

Acknowledgements

We would like to thank Robin, Sue and Sam Howard for a most enjoyable, relaxing and rewarding stay, in extremely pleasant surroundings, and for all Robin's help with recording the moths and compiling the Table of results.

Further details about Las Descargues can be obtained from the website at www.lasdescargues.com. You will need to check with Robin whether he is receiving visitors at the time you would like to travel. His email address is: robin.howard@libertysurf.fr

Table 1. Macro-moths recorded at Las Descargues, Lot, France, 19-29 August 2003, by Robin Howard and Paul Waring.

K&R No.	Species	
63	*Hepialus sylvina*	Orange Swift
6823	*Laothoe populi*	Poplar Hawkmoth
6828	*Agrius convolvuli*	Convolvulus Hawkmoth
6834	*Hyloicus pinastri*	Pine Hawkmoth
6843	*Macroglossum stellatarum*	Hummingbird Hawkmoth
7503	*Watsonalla binaria*	Oak Hook-tip
7505	*Watsonalla cultraria*	Barred Hook-tip
7508	*Drepana falcataria falcataria*	Pebble Hook-tip
7510	*Sabra harpagula*	Scarce Hook-tip
7527	*Lomaspilis marginata*	Clouded Border
7539	*Macaria notata*	Peacock Moth
7542	*Macaria liturata*	Tawny-barred Angle
7607	*Plagodis dolabraria*	Scorched Wing
7609	*Pachycnemia hippocastanaria*	Horse Chestnut
7613	*Opisthograptis luteolata*	Brimstone Moth
7654	*Crocallis elinguaria*	Scalloped Oak
7686	*Biston betularia*	Peppered Moth
7754	*Peribatodes rhomboidaria*	Willow Beauty
7762	*Peribatodes secundaria*	Feathered Beauty
7807	*Adactylotis contaminaria*	
7824	*Cabera pusaria*	Common White Wave
7826	*Cabera exanthemata*	Common Wave
7836	*Campaea margaritata*	Light Emerald
7965	*Pseudoterpna pruinata*	Grass Emerald
7975	*Thetida smaragdaria*	Essex Emerald
7982	*Chlorissa viridata*	Small Grass Emerald
8002	*Jodis lactearia*	Little Emerald
8016	*Cyclophora albipunctata*	Birch Mocha
8017	*Cyclophora puppilaria*	Blair's Mocha
8022	*Cyclophora punctaria*	Maiden's Blush
8045	*Scopula ornata*	Lace Border
8054	*Scopula rubiginata*	Tawny Wave
8062	*Scopula imitaria*	Small Blood-vein
8132	*Idaea biselata*	Small Fan-footed Wave
8161	*Adaea dimidiata*	Single-dotted Wave
8186	*Idaea degeneraria*	Portland Ribbon Wave
8187	*Idaea straminata*	Plain Wave
8211	*Rhodometra sacraria*	Vestal
8289	*Camptogramma bilineata bilineata*	Yellow Shell
8342	*Chloroclysta miata*	Autumn Green Carpet
8385	*Colostygia pectinataria*	Green Carpet
8435	*Euphyia biangulata*	Cloaked Carpet
8456	*Perizoma alchemillata*	Small Rivulet
8509	*Eupithecia centaureata*	Lime-speck Pug
8538	*Eupithecia icterata*	Tawny Speckled Pug
8681	*Acasis viretata*	Yellow-barred Brindle
8716	*Notodonta dromedarius*	Iron Prominent
8719	*Notodonta ziczac*	Pebble Prominent
8727	*Pheosia tremula*	Swallow Prominent
8728	*Pheosia gnoma*	Lesser Swallow Prominent
8750	*Phalera bucephala*	Buff-tip

8758	*Stauropus fagi*	Lobster Moth
8777	*Acronicta psi*	Grey Dagger
8779	*Acronicta leporina*	Miller
8780	*Acronicta megacephala*	Poplar Grey
8787	*Acronicta rumicis*	Knot Grass
8789	*Craniophora ligustri*	Coronet
8801	*Cryphia algae*	Tree Lichen Beauty
8835	*Epizeuxis calvaria*	
8839	*Paracolax tristalis*	Clay Fan-foot
8904	*Dysgonia algira*	Passenger
8994	*Hypena proboscidalis*	Snout
9006	*Phytometra viridaria*	Small Purple-barred
9045	*Diachrysia chrysitis*	Burnished Brass
9051	*Macdunnoughia confusa*	Dewick's Plusia
9056	*Autographa gamma*	Silver Y
9097	*Emmelia trabealis*	Spotted Sulphur
9100	*Acontia lucida*	Pale Shoulder
9140	*Eublemma ostrinia*	Purple Marbled
9169	*Trisateles emortualis*	Olive Crescent
9240	*Callophasia lunula*	Toadflax Brocade
9307	*Amphipyra pyramidea*	Coper Underwing
9364	*Heliothis viriplaca*	Marbled Clover
9367	*Heliothis peltigera*	Bordered Straw
9370	*Helicoverpa armigera*	Scarce Bordered Straw
9407	*Stilbia anomala*	Anomalous*
9433	*Paradrina clavipalpis*	Pale Mottled Willow
9453	*Hoplodrina respersa*	
9454	*Hoplodrina ambigua*	Vine's Rustic
9460	*Spodoptera exigua*	Small Mottled Willow
9481	*Dypterygia scabriuscula*	Bird's Wing
9490	*Mormo maura*	Old Lady
9496	*Thalpophila matura*	Straw Underwing
9503	*Euplexia lucipara*	Small Angle Shades
9505	*Phlogophora meticulosa*	Angle Shades
9520	*Callopistria juventina*	Latin
9550	*Cosmia trapezina*	Dun-bar
9575	*Agrochola helvola*	Flounced Chestnut
9786	*Mesoligia furuncula*	Cloaked Minor
9789	*Mesapamea secalis*	Common Rustic
9810	*Luperina dumerilii*	Dumeril's Rustic
9831	*Amphipoea lucens*	Large Ear
9907	*Anarta myrtilii*	Beautiful Yellow Underwing
9917	*Lacanobia oleracea*	Bright-line Brown-eye
9925	*Hada plebeja*	Shears
9987	*Mamestra brassicae*	Cabbage Moth
10002	*Mythimna albipuncta*	White-point
10003	*Mythimna vitellina*	Delicate
10007	*Mythimna pallens*	Common Wainscot
10022	*Mythimna l-album*	L-album Wainscot*
10035	*Mythimna unipuncta*	White-speck
10086	*Ochropleura plecta*	Flame Shoulder
10096	*Noctua pronuba*	Large Yellow Underwing
10099	*Noctua comes*	Lesser Yellow Underwing
10100	*Noctua fimbriata*	Broad-bordered Yellow Underwing
10102	*Noctua janthina*	Langmaid's Yellow Underwing
10103	*Noctua janthe*	Lesser Broad-bordered Yellow Underwing
10199	*Xestia c-nigrum*	Setaceous Hebrew Character
10212	*Xestia xanthographa*	Square-spot Rustic
10216	*Xestia agathina agathina*	Heat Rustic
10336	*Agrotis crassa*	Great Dart
10346	*Agrotis ipsilon*	Dark Sword-grass
10348	*Agrotis exclamationis*	Heart and Dart
10416	*Arctornis l-nigrum*	Black V Moth
10423	*Meganola strigula*	Small Black Arches
10441	*Nycteola revayana*	Oak Nycteoline
10449	*Bena bicolorana*	Scarce Silver-lines
10475	*Miltochrista miniata*	Rosy Footman
10487	*Eilema depressa*	Buff Footman
10488	*Eilema griseola*	Dingy Footman
10490	*Eilema complana*	Scarce Footman
10550	*Phragmatobia fuliginosa fuliginosa*	Ruby Tiger
10598	*Arctia caja*	Garden Tiger
10605	*Euplagia quadripunctaria*	Jersey Tiger

*ID not confirmed, moth escaped in field

Some Observations on Mating and Oviposition Behaviour of *Leptura aurulenta* (Fab.) (Col: Cerambycidae)

by Steve Hoskin (10361) and Dr Chris Hinks

Leptura aurulenta, sometimes called the Hornet Beetle, is a handsome black and yellow cerambycid (Plate 3) restricted to the south and southwest of England (Twinn and Harding 1999). It is distinguished from similarly marked species of *Leptura, e.g. L. quadrifasciata* (Plate 3) by it's red legs and basal antennal segments and the presence, on the pronotum, of anterior and posterior fringes of golden pubescence (Duffy 1952).

Mating behaviour

Recently, on Porkellis Moor in Cornwall, a number of *Leptura aurulenta* males were observed, showing a particular interest in one log of wood out of a group of twelve. The logs were on average 450 mm in diameter by 300 mm long. The log they were interested in had a scaffold board resting on one third of the top cut end and spanned to another to form a bench seat.

Tilting back the board revealed a gravid female slowly crawling out of her emergence hole. It was evident that the female had just emerged because there was no sign of her attempting to chew the underside of the board. In a previous visit, inspection of the same piece of wood revealed a male at the top of its exit hole. This male, in contrast, must have been at this point for some time, as he had chewed a distinct impression in the underside of the board.

The female was observed clumsily walking around the sun-lit surface of the log, flicking open and shut her elytra every five to seven seconds. This behaviour continued for about two minutes until she slipped from the edge of the log and tumbled to the ground. She was

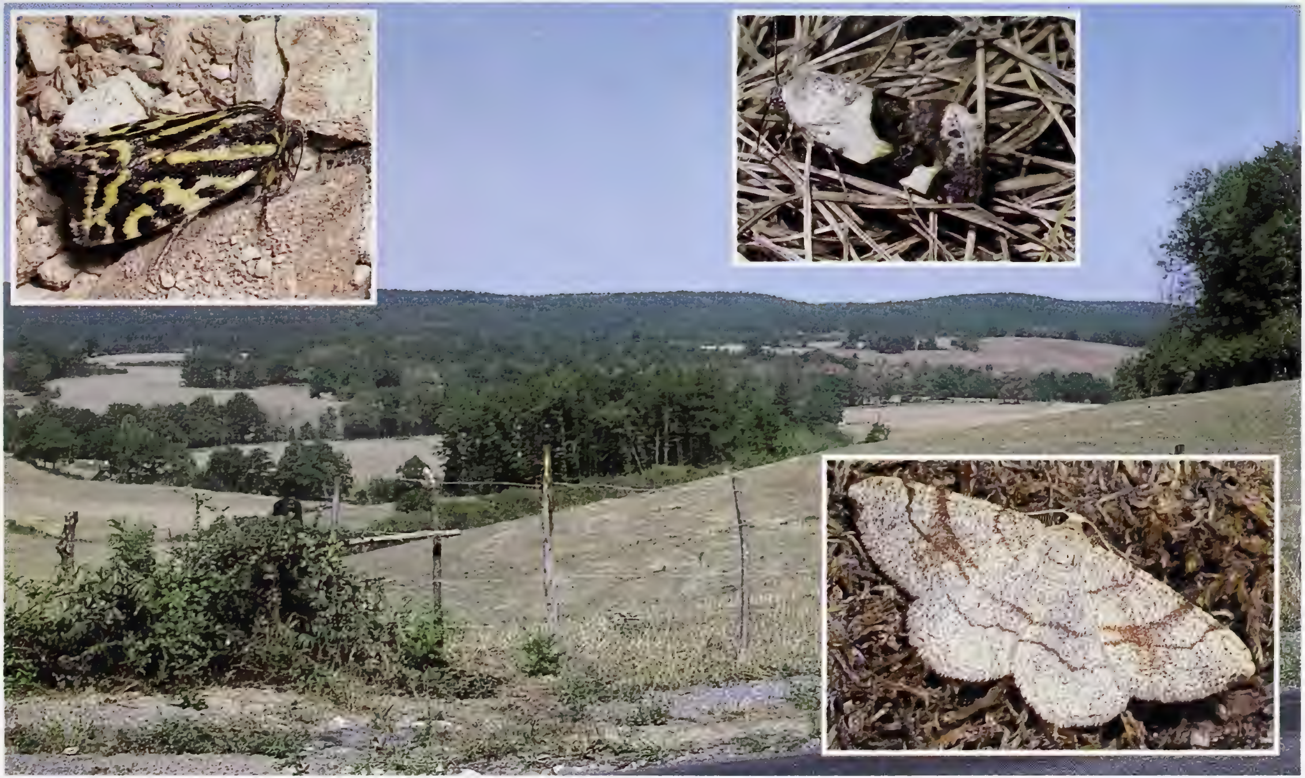


Plate 1. Moths found at Las Descargues in France during August 2003. (Waring and Thomas, Lepidoptera at Las Descargues . . .)
Main picture: Lot landscape from Las Descargues, France.
Inset clockwise from left to right: Spotted Sulphur *Emmelia trabealis*; Pale Shoulder *Acontia lucida*; *Adactylotis contaminaria*.
Photos: Paul Waring

Plate 2. Jean Henri Fabre's insect garden. (Waring and Thomas, Lepidoptera at Las Descargues . . .) Main picture: Insect garden at Saint-Leons, preserving situations where Fabre found insects. Inset: Paul Waring and daughter Kirsty Mae visiting statue of Jean Henri Fabre, Saint-Leons, France, August 2003. Photos: Paul Waring

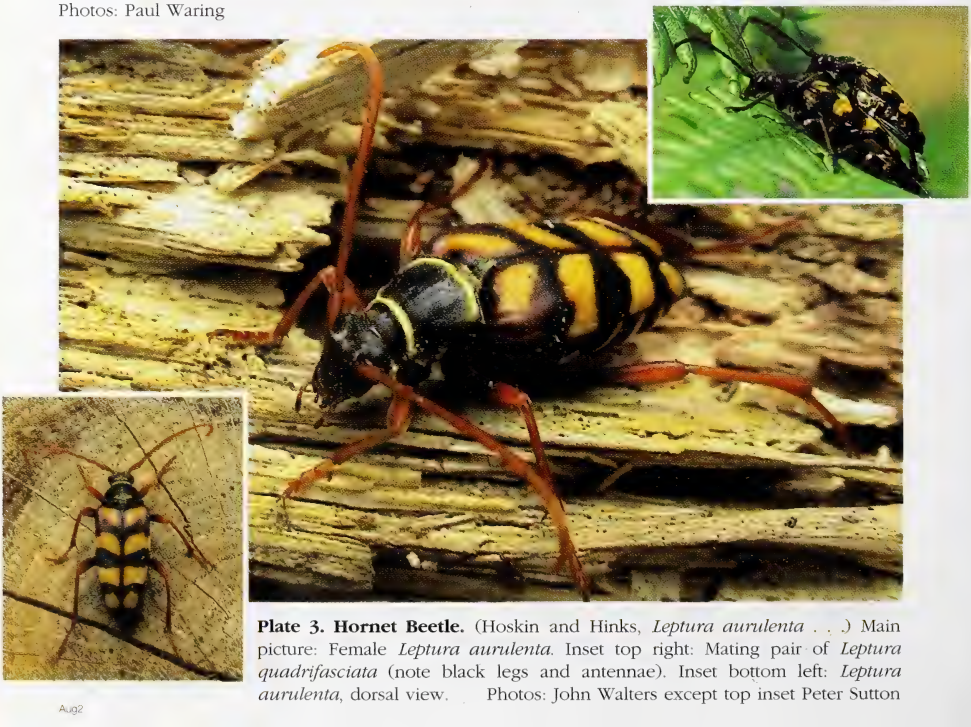


Plate 3. Hornet Beetle. (Hoskin and Hinks, *Leptura aurulenta* . . .) Main picture: Female *Leptura aurulenta.* Inset top right: Mating pair of *Leptura quadrifasciata* (note black legs and antennae). Inset bottom left: *Leptura aurulenta*, dorsal view. Photos: John Walters except top inset Peter Sutton

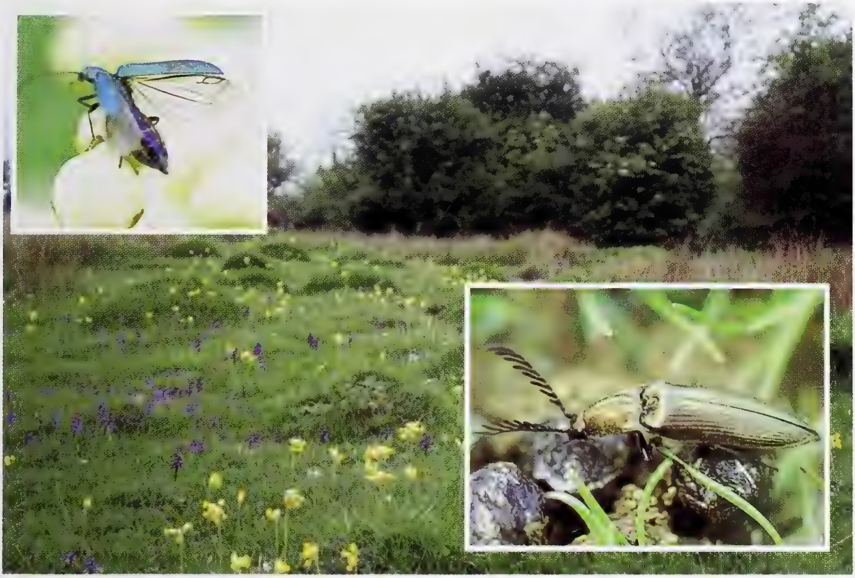


Plate 4. Pilch Field. (Sutton, *Ctenicera pectinicornis . . .*): Main picture: Pilch Field, Buckinghamshire Inset top left: *Ischnomera cyanea* on Hawthorn blossom, Inset bottom right: *Ctenicera pectinicornis* was found flying among the profusion of Cowslips and Green-winged Orchids. Photos: Peter Sutton

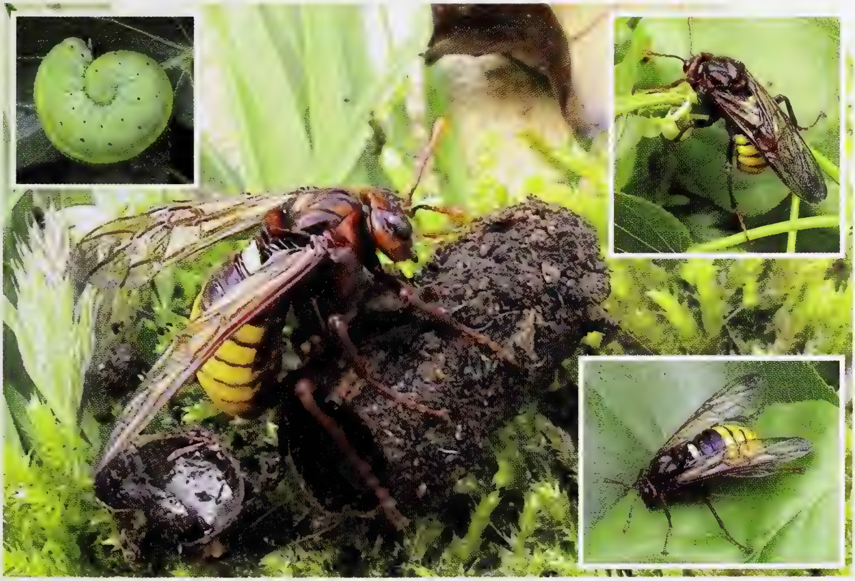


Plate 5. Hornet mimic, the sawfly *Cimbex connatus*. (Henwood and Walters, The Sawfly...) Main picture: The sawfly *Cimbex connatus*, having recently emerged from its cocoon. Inset clockwise from top left: Larvae can reach up to 40 mm; additional views of this rare species. Photos: John Walters

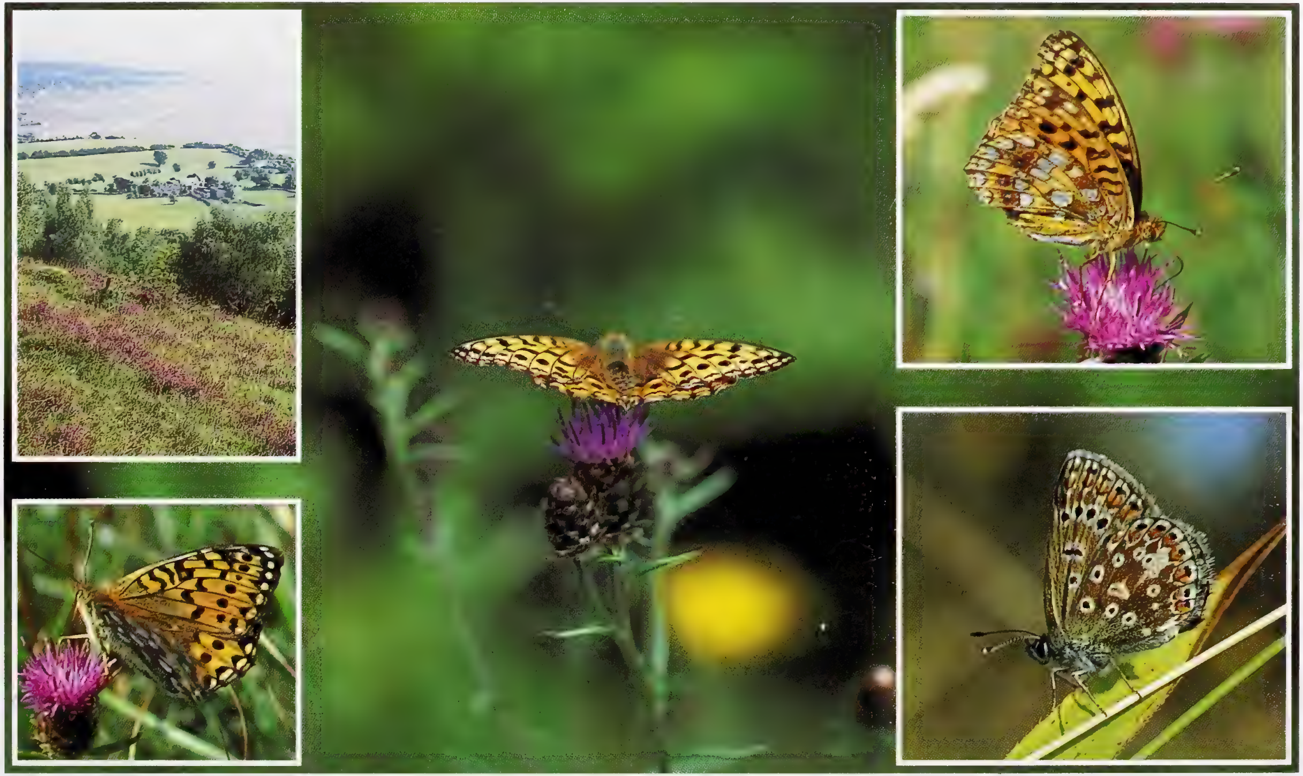
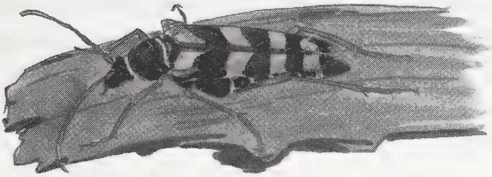


Plate 6. Arnside Knott, Cumbria. (Sutton, Arnside Knott) Main picture: The majesty of a Dark Green Fritillary *Argynnis aglaja* is framed against broadleaf woodland in full summer cloth at Arnside Knott. Inset clockwise from top left: the limestone hillsides of Arnside Knott overlook the estuarine sands of Morecambe Bay; a High Brown Fritillary *Argynnis adippe* showing the diagnostic row of red-brown pearl-centred spots; Northern Brown Argus *Aricia artaxerxes*; Dark Green Fritillary nectar-feeding at thistle. Photos: Peter Sutton



transferred back to the log, but promptly walked off the edge, tumbling to the ground again. This time her progress was followed through the short sparse vegetation around the log, which she ascended, before coming to rest on the shaded side, 70 mm from the ground.

During the observation of the female four males flew around the observer. One landed and walked on his shoulder for a few seconds. Two others inspected the side and upper surface of the wood, where one of these located the female and tried to mate. However, that attempt came to an abrupt end, as she dislodged him with one of her hind legs. He retreated, briefly taking to the air, then returned to the log. The fourth male, when not flying overhead clambered about on brambles, two metres away.

The two males that were on the upper surface walked in a jerky wasp like manner, waving antenna and palpi as they sampled the surface of the wood. They appeared to be searching for the female. Eventually one descended to within 50 mm of the point where the female had tumbled to the ground. He walked in a somewhat zigzag fashion with antenna waving, following the course of the female. When this male contacted the female he met no resistance from her and they started to copulate. Seconds later another male landed just below the mating pair and with great vigour attempted to remove the male by biting and pulling at his legs, pronotum and the antenna, especially the basal segments.

However, the successful male kept his competitor at bay by kicking his back legs. As the intruder flew off it was noted that the proximal part of the genitalia of the copulating male was exposed, which is also the case for the closely related species, *Leptura quadrifasciata* (Plate 3). Dispersal of the other males followed shortly after. The pair in copulation quickly relaxed, and after a few minutes appeared to be motionless.

It is noteworthy that of the four courting males the first male to contact the female, which was rejected, was the smallest and it was the largest male that was successful.

It was deduced from these observations that newly emerged females *Leptura aurulenta* are immediately receptive to males, which they attract by rapidly flicking the elytra open and shut. This behaviour may aid in disseminating a pheromone or it may simply constitute display. As males of the species are attracted to pre-emergent females, the release of pheromones may occur at an earlier stage of emergence. Although Crowson (1981) considered it unlikely that stridulation has a role in courtship, the occurrence of stridulatory organs in many cerambycids means it cannot be ruled out as a means of pre-emergent communication.

Oviposition behaviour

A female *L. aurulenta* was noted on the broken end of a sycamore trunk lying on the ground at the margin of a field in the Penrose Estate (National Trust), Cornwall on 06.viii.2003. This beetle was searching an expanse of exposed dry wood denuded of bark and for the ensuing hour of our observations confined her attention to this area. During searching she progressed in a somewhat jerky manner, palpating the surface with her antennae at intervals and displaying particular interest in the many fissures in the surface. Certain fissures were further explored in a repeated pattern, which consisted of quickly turning to extrude the tip of the ovipositor into the fissure. The mobile tip of the ovipositor was used to explore along a fissure in a systematic manner with pauses, at intervals, in places where we assumed an egg was inserted. The same areas were repeatedly examined in what appeared to be a very random process.

We interrupted our observations to survey the beetle fauna of a nearby wet meadow, but after two hours we returned to the sycamore trunk where a female *L. aurulenta* was still searching and "ovipositing" in the same area, in the manner described. Then, as previously, the female appeared to be quite unaffected by our presence, or of the passage of walkers along the nearby footpath. At this time, two other female *L. aurulenta* were observed displaying the same behaviour on the vertical stump of the tree from which the trunk had broken.

Acknowledgements

We thank Dave Chambers, warden of the National Trust's Penrose Estate, Porthleven, and Reg Roberts, owner of Porkellis Moor, for kindly granting access to the respective properties and John Walters for providing the photographs and illustrations of *Leptura aurulenta*.

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Athous campyloides (Newman) 1833=*difformis* Boisduval and Lacordaire, 1835 Elateridae in Greater London

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The click beetle *Athous campyloides*, status within the British Isles, is listed as nationally scarce (Notable b, Hyman and Parsons, 1992), with the majority of records confined to the southeast corner of southern England. A distribution map also shows a last century record for vice-county 66, mid-west Yorkshire, and one record for West Cornwall and one record for the Scilly Isles, both vice-county 1.

During the early part of 1997 a high wind dislodged several roof tiles and these were blown into the back garden and lay for several weeks at the edge of a lawn where the grass is kept long. Much later, while tidying up the garden on 18th June 1997, I turned over two pieces of tile and found one female *Athous campyloides* under each; this was surprising as females are said to remain underground at the roots of grass for much of their life. Later, one male was swept from grass at the edge of a large field adjoining a golf course, 8th July 2000, at The Woodlands Trust Farm, Shooters Hill, Kent, TQ 4476, vice-county 16; the above site is only about one mile away from my garden.

During the intermittent very hot spells of weather in July 2004 I was diligent in filling a garden birdbath daily with water, and was surprised to find the following drowned *A. campyloides* in the water, three males on 17th June 2004, one more male on 9th July 2004, and one female on 25th July 2004.

Having found so many individuals in such a short space of time, and in circumstances not expected, I wonder if this beetle is scarce, due to its remaining for much of its life underground at the roots of grass. In contrast, the scarcity of some *Agrilus* beetle adults that are found in Hawthorn trees may be due to their short emergence period for their not being seen or taken. For example, in my local park there is a preponderance of exit holes in six or seven Hawthorn trees but as yet, I have never found an adult *Agrilus* in fifty years although I walk the park at least twice a week.

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Ctenicera pectinicornis (L., 1758) (Coleoptera: Elateridae), new to Buckinghamshire

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In a previous article, the ancient meadows of Pilch Field were described, together with a brief account of the flora and fauna that were observed at the site on 11.vi.2002 (Sutton, 2002). In order to observe some of the invertebrates that appear earlier in the year, the site was revisited on the 10th of May this year. Pilch Field is a Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BBOWT) site and is also a Site of Special Scientific Interest (SSSI). It is an open-access nature reserve that can be visited all year round, and further details of this site can be found in the useful publication, *Where to go for Wildlife in Berkshire, Buckinghamshire and Oxfordshire* (2000).

I arrived at the site at 3.30pm. The weather was very humid, and the sporadic cloud cover occasionally punctuated the long hot spells of sunshine. The ancient field system, with its medieval ridge and furrow (Figure 1), was covered with a profusion of Cowslips *Primula veris* and Green-winged Orchids *Orchis morio.*

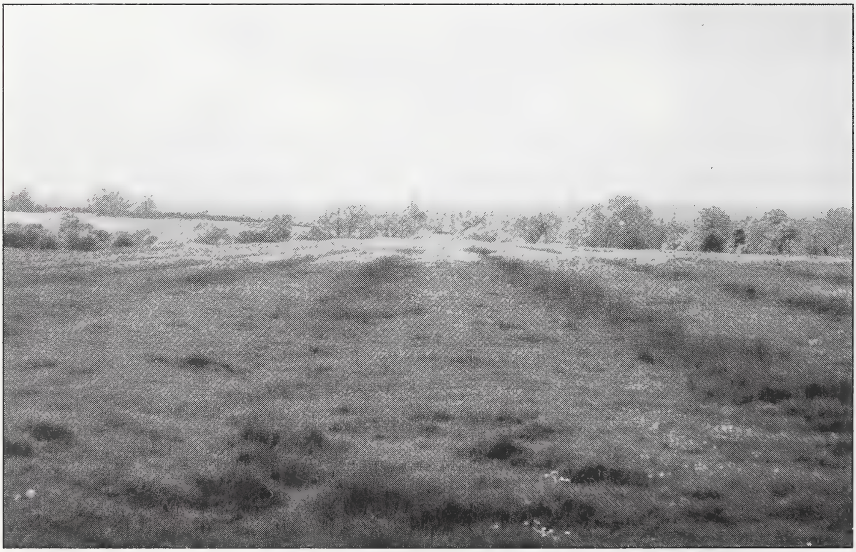

Figure 1. The ancient meadows of Pilch Field still show evidence of the medieval ridge and furrow field system.

At the far end of the reserve was a very wet area fed by wet flushes. To the left of this was an area of higher ground, which was dominated by Yellow Meadow Ant *Lasius flavus* mounds and blossoming Hawthorns (Plate 4). In the previous article I mentioned that Pilch Field has much to offer the dipterist, and again, this proved to be the case as I was immediately struck by the diversity of Hymenoptera and Diptera that were flying in this area of the meadow. Colourful *Nomada* spp. and *Sphecodes* spp. of bee appeared to be very interested in the Yellow Meadow Ant mounds, although both groups are brood parasites of other bees. Their potential hosts, the *Andrena* spp. and *Lasioglossum* spp. were also present in abundance. The blossoming Hawthorns were a hotbed of activity for many species, and among the flower clusters were a number of beetles, including the nationally scarce (pNb) metallic blue flower beetle, *Ischnomera cyanea* (F.), the adults of which were observed flying readily between flowers in the hot afternoon sunlight (Plate 4).

Ischnomera cyanea was recently separated from *Ischnomera caerulea* after it was discovered that the British species known as *Ischnomera caerulea* was in fact a mixture of both species (Allen, 1988). The correct identification of each species is not a simple affair. Apparently, the females are indistinguishable, and the males can only be separated by examining the structure of their respective aedagi. Allen (*loc. cit.*) put forward the observation of the raised longitudinal lines on the elytra of each species, together with the comparative 'brightness' of colour, as possible distinguishing features for each species, but although it has been shown that these features can be used to separate the species effectively in the small sample sizes examined, they are probably too variable to be unequivocally reliable. Mendel (1990a) subsequently found an additional difference between the species, and proposed (with illustrated figures) that the structure of the tarsal claws could be used to separate each species. It was observed that *Ischnomera cyanea* had a simple, or at best, slightly angled claw structure, whereas the tarsi of *Ischnomera caerulea* were shown to be distinctly toothed.

The rarer *Ischnomera caerulea* (pRDB3) seems to be associated with ancient broad-leaved woodland and pasture woodland, whereas *Ischnomera cyanea* appears to have more catholic requirements, and can be found in a variety of woodland and hedgerow habitats.

During my observation of the bees and wasps that were patrolling the Yellow Meadow Ant mounds, I noticed a large insect flying low among the Cowslips and Green-winged Orchids. Closer observation revealed that it was a large metallic bronze-green click beetle, which was photographed (Plate 4) and subsequently identified as a male specimen of *Ctenicera pectinicornis*. This insect could possibly be confused with the metallic green form of a closely related species, *Ctenicera cuprea* var. *aeruginosus* (F.), but the latter species, which is typically found in more acidic grassland habitats, has less pectinate antennae than *C. pectinicornis* (Figure 2). (Males of both species have pectinate antennae. This is not the case for females of each species, (*e.g.* Figure 3) whose antennae are simple, but noticeably serrated.)

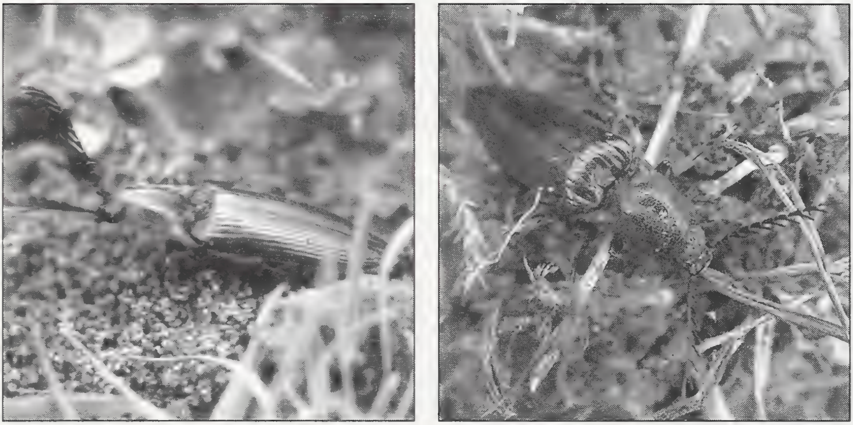

Figure 2. The males of the slightly larger (13-17 mm) *Ctenicera pectinicornis* (left) can be separated from males of the very similar *Ctenicera cuprea* var. *aeruginosus** (right) (12-15 mm) on the basis of their more flamboyant antennae.

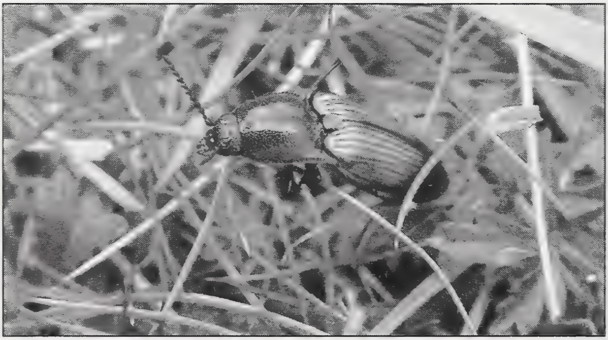

Figure 3. The antennae of the females of *Ctenicera pectinicornis* and *Ctenicera cuprea** (shown above) have a noticeably serrated structure.

(*Photographs of Dartmoor (Devon) specimens of *C. cuprea* in Figures 2 and 3 were taken by John Walters)

Ctenicera pectinicornis is usually found in the lush neutral grassland of old hay meadows and pastures, where its larvae feed in the soil among the roots of plants. The adults, which can be found feeding at umbellifers, have a short season, and have been recorded in May and June.

Finding this species in Buckinghamshire was something of a surprise, since, according to the provisional distribution atlas for the click beetles (Mendel, 1990b), it had not been recorded east of a line drawn from Exeter to The Wash. Hyman and Parsons (1992) did however provide evidence that this record was within the former (pre-1970) range for this species, where it had previously been recorded from Berkshire, Bedfordshire and North Essex. After obtaining the latest edition of the provisional atlas (Mendel and Clarke, 1996), which contains several more south-easterly records, its continuing presence in Bedfordshire was confirmed. Both works confirmed that, apparently, there are no historical records for this species from Buckinghamshire. Figure 4 shows the current known UK distribution of *Ctenicera pectinicornis* (reproduced with kind permission). The arrow indicates the new Buckinghamshire site.

Hyman and Parsons (*loc. cit.*) also state that this species is very local and possibly declining. In view of the habitat requirements of this nationally scarce (Na) species, this is unsurprising. The *UK Habitat Action Plan* (HAP) *for Lowland Meadows* (JNCC, 2001) states that there is now less than 15,000 ha of species-rich neutral grassland remaining in the UK, with this figure being subject to continuing losses. (In addition, the *UK Biodiversity Steering Group Report* (1995) estimated that by 1984, in lowland England and Wales, a colossal 97 % of semi-natural grassland was lost during the previous half century.) Consequently, what little habitat remains is now fragmented and often highly localised. Nevertheless, the HAP identifies some important areas. Worcestershire is described as having “an especially important concentration” of species-rich neutral grasslands, and Somerset and Wiltshire are also described as important counties for this habitat. It is clear from recent correspondence with the British-Beetles e-group, that where these areas coincide with the natural range of this grassland species, good populations can often exist.

It was a pleasure to discover *Ctenicera pectinicornis* in an ancient meadow in Buckinghamshire, and whilst Pilch Field remains, as per the first article, “an isolated island of past biodiversity in a modern agricultural landscape”, it is hoped that the rich diversity of invertebrates present at this remarkable site will continue to flourish.

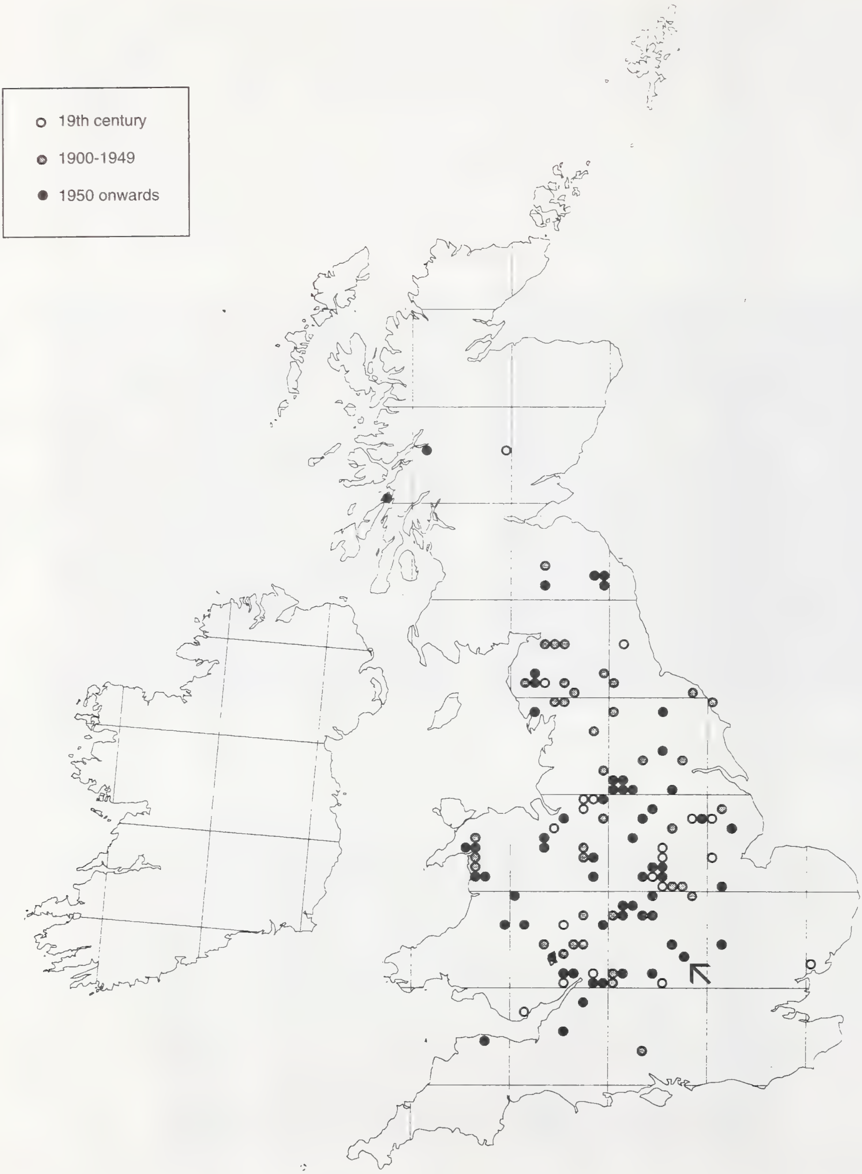

Figure 4. UK distribution map for *Ctenicera pectinicornis.* The new Buckinghamshire site is indicated by the arrow.)

Acknowledgements

Sincere thanks to: Howard Mendel for confirming the identification of *Ctenicera pectinicornis*, for kind provision of the latest click beetle atlas, and permission to reproduce the distribution map; Peter Hodge for identification of *Ischnomera cyanea*; John Walters for providing the excellent photographs of *Ctenicera cuprea*; and members of the British-Beetles e-group for providing useful additional information.

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The Sawfly *Cimbex connatus* (Schrank) (Hymenoptera: Cimbicidae) in Devon

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The sawfly *Cimbex connatus* (Plate 5) is one of the largest and rarest British sawflies. It is found throughout Europe but has only been recorded from southern England in the UK.

Two other members of this genus have been recorded in the UK. *Cimbex lutens* is a scarce species associated with sallows *Salix* spp and Aspen *Populus tremula*. The Birch Sawfly *Cimbex femoratus* is a widespread but local species found in birch woodlands.

Cimbex connatus is the rarest of the three species. It is a large sawfly, up to 30 mm long, with a striking wasp-like appearance. The larvae grow up to 40 mm in length and are green with a pale bordered dark stripe along the back (see Plate 5).

There are historic records from Suffolk, Surrey, Sussex and Devon. The most recent of these was of several larvae found at Leighan Valley, Devon in 1947. There were no further sightings for fifty years until a female was found beside the River Nadder, near Compton Chamberlayne, Salisbury in July 1997 (Edmunds, 1998).

In October 2000 and September 2001, larvae thought to be of *Cimbex connatus* were found in a shopping centre car park at Barton, Torquay, Devon. Their identity was confirmed when a dead adult was found there on 19 June 2001 (Halstead, 2002).

Further larvae were found independently by Maurice Edmonds (ME) at Barton (SX 897 666) in August 2001. ME had also observed and photographed an adult at Dawlish Warren, Devon (SX 982 789) on 25 July that year and sent his photographs to JMW to confirm identification. JMW visited both Dawlish Warren and Barton during 2002 to look for adults and larvae. None were found at Dawlish Warren but the larvae were found commonly on Italian Alders *Alnus cordata* at Barton. Several of the larvae were taken and reared, with the resulting adults emerging in May 2003.

On 21 August 2003 BH discovered several larvae of *Cimbex connatus* on Italian alders at Kingsteignton, Devon (SX 874 726). This site lies roughly midway between the two previously known sites. Further searches by BH and JMW led to more records of larvae from Kingsteington (SX 868 727 and SX 871 726) on 30 August and Buckland, Newton Abbot (SX 875 712) on 26 August. On 26 August BH looked for larvae on Common Alder *Alnus glutinosa* in a meadow adjacent to the shopping centre car park at Barton and found none.

Two larvae are believed to have been found on Exmoor by John Robbins in 2002.

The larvae have all been found on Italian Alder *Alnus cordata* except one at Kingsteignton on Common Alder *Alnus glutinosa.* Larvae have been found on Grey Alder *Alnus incana* on the Continent. The adult at Dawlish Warren was seen in an area of Common Alder *Alnus glutinosa* but so far no larvae have been recorded from this site.

The larvae were kept in plastic containers with plenty of food plant and were fairly easy to rear. When fully grown they spun strong cocoons in the soil provided. One of these was opened in January and found to contain an overwintering larva. Pupation probably occurs in the spring with the adults emerging from late May to July.

It is likely that there are more sites for this rare species in Devon and probably in other areas of southern England. Searching for larvae, especially on Italian Alder *Alnus cordata* is most likely to be successful.

Acknowledgements

Thanks to Maurice Edmonds for informing us of his discoveries and Barnaby Walters for his help in the field.

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◆

The Queen of Spain Fritillary *Issoria lathonia* – a positive sighting in a wood west of Salisbury

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I thought it might be of interest to mention that I came across a male Queen of Spain Fritillary *Issoria lathonia* in a wood just west of Salisbury on 23rd July 2003. I understand that there have been other sightings of *I. lathonia* this year, but I believe most, if not all have been in the east of the country. The butterfly was somewhat bedraggled, having been beaten down by a heavy rain shower, but was nonetheless in reasonable condition.

I assume that the specimen was a migrant, but would be pleased to hear from anyone knowing of any releases of captive-bred examples in the area. It seems to have been a good year for migrants generally, and in this particular wood there was an abundance of Painted Lady *Cynthia cardui* and Red Admiral *Vanessa atalanta*. Regarding both these species, it is also noteworthy that *Cynthia cardui* ab. *pallida* Schöyen and *Vanessa atalanta* ab. *klemensiewiczi* Schille were seen on the same day as *Issoria lathonia*.

FOOTNOTE:

This article was originally submitted for publication in *The Bulletin* in 2003. The article published by Jan Koryszko (*The Bulletin*, Vol 63, No. 454, June 2004) relating to the sighting of a Queen of Spain Fritillary last August in Staffordshire is particularly interesting. My own view is that these are probably migrant specimens, and not released captive-bred specimens. This view is based on the fact that these two sightings were at roughly the same time of the year, but were over 100 miles apart, and that also other sightings of the Queen of Spain have also been reported (24th July, Cambridgeshire – see *British Wildlife*, Vol 15, No. 1, October 2003). In addition, it seems that 2003 was a good year for rare migrants in general, with reports of Camberwell Beauty, Long-tailed Blue, Black-veined White, Bath White, Berger's Clouded Yellow, Swallowtail (presumed ssp. *gorganus*), American Painted Lady and Monarch (*British Wildlife*, various numbers from 2003).

Classic Entomological Sites: Arnside Knott, Cumbria

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Introduction

Whilst writing this series of articles I pondered the question, "what constitutes a classic entomological site?" Does it depend upon the diversity of species present at a given site or simply an aspect of its fauna? Certainly, Shapwick Heath NNR in Somerset is a fabled site for those with an interest in aquatic Coleoptera, and in past times, Bernwood Forest's Hell Coppice in Oxfordshire was the place to be for the lepidopteran aristocracy, reputedly leading to the phrase, "See you in Hell", which was used among Oxford University's butterfly collectors at the time (Thomas and Lewington, 1991). This latter site, together with the New Forest, were classic collecting grounds, and hence well known entomological sites, and yet the reputation of some of these sites was based on the presence of comparatively few species. Conversely, there are sites that have an extraordinary diversity and abundance of species, which are not regarded to be 'classic' entomological sites because they do not contain the species that typically inspire interest among the majority of entomologists. Arnside Knott in Cumbria falls into the former category, and while it has what might be regarded as a somewhat limited known entomological fauna, it does provide habitat for some of our rarer species of Lepidoptera. Indeed, Arnside Knott represents something of a success story for a species that has declined disastrously over the last 50 years, the High Brown Fritillary *Argynnis adippe* (Plate 6). The Morecambe Bay region, together with Dartmoor colonies in Devon, currently provide the national strongholds for this species in the British Isles. This and other specialities to be found at the site are described below.

Arnside Knott (Grid ref: SD 453 744) is owned and managed by the National Trust and is open to the public all year round. It is situated on carboniferous limestone hills overlooking Morecambe Bay (Plate 6) where the River Kent feeds into the bay. The site has a considerable expanse of broad-leaved woodland, together with dry limestone grassland habitats with limestone outcrops.

The entomological fauna of Arnside Knott

Lepidoptera – butterflies and moths

Clearly the main focus of interest at Arnside Knott is its lepidopteran fauna, particularly the fritillary butterflies. Understandably, the High

Brown Fritillary (RDB2, vulnerable), whose British populations are estimated to have declined by 94 % according to Butterfly Conservation statistics, takes priority from a habitat management point of view. The stringent habitat requirements of this species, which are primarily associated with the temperature requirements of its larvae, are at present being successfully met by the current management strategy on the reserve. The fortunes of the High Brown Fritillary have suffered at the hands of the weather in recent years, but last years record-breaking temperatures at last brought some encouraging news for this and several other species. This good fortune was confirmed at Arnside Knott, which recorded its highest number of High Brown Fritillaries (including 179 in a single transect) since recording began in 1991 (Bowles and Fox, 2003).

Also present are the Pearl-bordered Fritillary *Boloria euphrosyne*, which has experienced a similar but somewhat less dramatic decline in recent times, the Small Pearl-bordered Fritillary *Boloria selene*, and the Dark Green Fritillary *Argynnis aglaja* (Plate 6). There is an old record for the Silver-washed Fritillary *Argynnis paphia*, but this species has not been seen for many years. This is also the case for the Duke of Burgundy *Hamearis lucina*, and the Grizzled Skipper *Pyrgus malvae,* which may now have been lost from the site. (It should also be noted that Hill and Twist (1998) do not refer to the Pearl and Small Pearl-bordered Fritillaries in their very useful site guide…are they still present on the reserve?) The Brown Hairstreak *Thecla betulae*, which was last seen at Arnside Knott in the early 1990's (Sokoloff *et al*., 1993) appears to have been lost from all of its former sites in northern England (Asher *et al., loc. cit.*). The Purple Hairstreak *Neozephyrus (Quercusia) quercus* can still be found in the broadleaf woodland at the site.

Arnside Knott is noted for an important and substantial colony of Scotch Argus *Erebia aethiops*, which, according to Asher *et al*. (2001) is one of only two colonies to be found on this side of the Scottish border. Good numbers of Grayling *Hipparchia semele* and Wall *Lasiommata megera* can be found, as well as the Northern Brown Argus *Aricia artaxerxes* (Plate 6) which is present in low numbers.

Noteworthy moths that have been recorded from the site include the Least Minor *Photedes captiuncula* (RDB3), and a number of nationally scarce and local species including: *Scoparia ulmella* and *Anania funebris* (pyralids); Barred Carpet *Perizoma taeniata*; *Lampronia pubicornis* (longhorn moth); *Phyllonorycter muelleriella* and *Elachista dispunctella* (micro-moths); *Eriopsela quadrana* (tortrix moth); Cistus Forester *Adscita geryon*; Chestnut-coloured Carpet *Thera cognata*;

Bleached Pug *Eupitheca expallidata*; Thyme Pug *Eupithecia distinctaria constricta*; Blomer's Rivulet *Discoloxia blomeri*; Galium Carpet *Epirrhoe galiata*; Golden-rod Pug *Eupithecia virgaureata*; Small Elephant Hawk-moth *Deilephila porcellus*; Wood Tiger *Parasemia plantaginis*; Least Black Arches *Nola confusalis*; Archer's Dart *Agrotis vestigialis*; Blossom Underwing *Orthosia miniosa*; Red Sword-grass *Xylena vetusta*; Feathered Ranunculus *Eumichtis lichenea lichenea*; Crescent *Celaena leucostigma* and Fen Wainscot *Arenostola phragmitidis*.

Other invertebrates

After recent apparent declines, the Wood Ant *Formica rufa* (Figure 1) is now at its northernmost limit at Arnside Knott in Cumbria, although Hoy and Roberts (1997) have stated that increased recorder effort is required to confirm this observation. A species typically associated with Wood Ant nests is the myrmecophilic leaf beetle (Chrysomelidae), *Clytra quadripunctata* (Figure 2).

Other noteworthy beetles that have been recorded at Arnside Knott include: *Cryptocephalus bipunctatus* (leaf beetle); the oedemerid, *Oncomera femorata*; the Orchid Beetle *Dascillus cervinus*; the weevil *Otiorhynchus porcatus*; and the cerambycids *Strangalia melanura* and

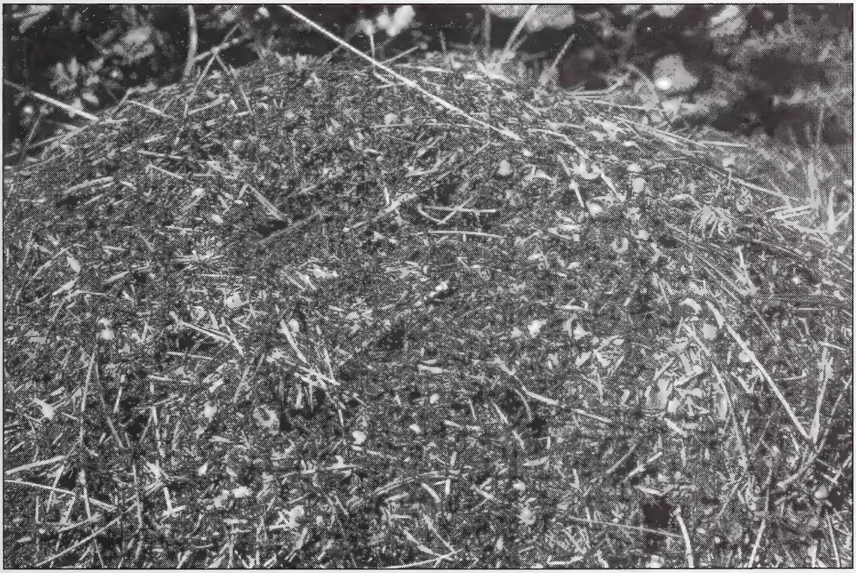

Figure 1. The Wood Ant *Formica rufa* appears to have declined in northern England, particularly in the Lake District, but colonies are still present at Arnside Knott.

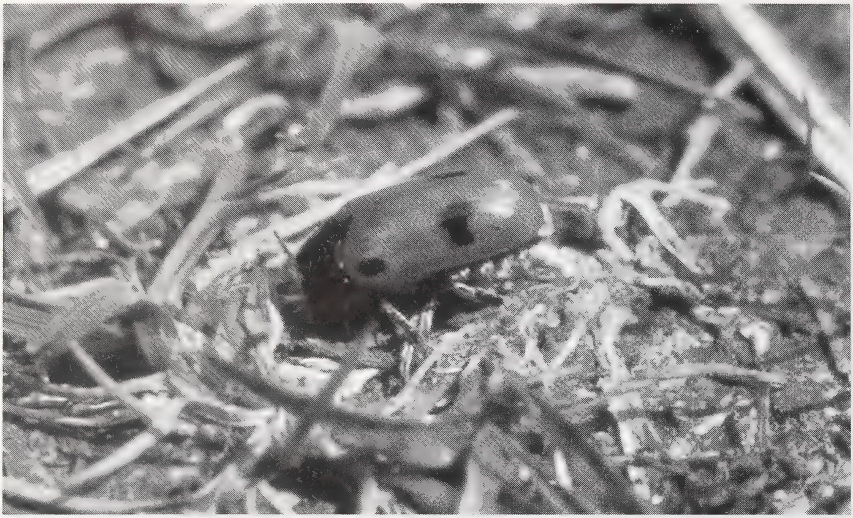

Figure 2. The myrmecophilic beetle, *Clytra quadripunctata*, spends its larval life in Wood Ant nests where it feeds on the eggs, larvae and pupae of the ants. The adult, which emerges from a protective tube close to the surface of the anthill hatches in spring, and is usually found on foliage in the vicinity of the ant nest.

interestingly, *Grammoptera holomelina.* This latter species, which was formerly considered as a separate species, is now regarded to be a form of *Grammoptera ruficornis* (Twinn and Harding, 1999).

The Diptera include the hoverflies: *Didea fasciata, Cheilosia fraterna, Cheilosia antiqua* and *Cheilosia impressa*; and the robberfly *Dioctria oelandica.*

Diary notes

Arnside Knott was visited on the 5th of August 2003 during a family outing. This initial foray was brief, and in the intense heat, the rest of the party was left under the ample shade of the broadleaf woodland at the top of the hill while my father-in-law and I searched for the High Brown Fritillary on the dry grassland slopes. There were plenty of Painted Ladies *Cynthia cardui* and other vanessids to confuse the issue, but eventually, we managed to find a late season specimen feeding at bramble blossom at the bottom of the hill, which proved impossible to get close to. There were many Brimstones *Gonepteryx rhamni* (Figure 3) on the wing and an astonishing number of Silver Y moths *Autographa gamma* flying among the meadow grasses.

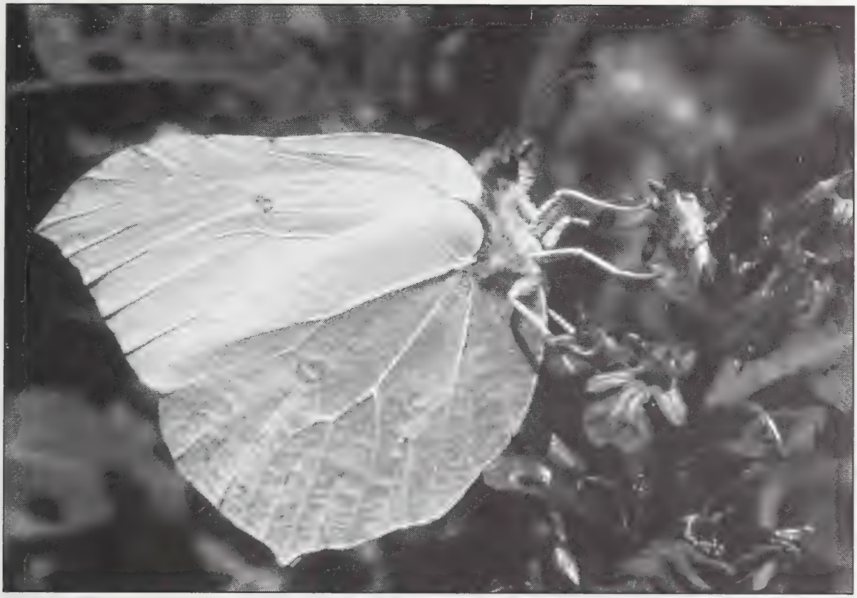

Figure 3. The Brimstone *Gonepteryx rhamni* which has increased its range by more than a third in the last thirty years (Asher *et al*., 2001) has now reached the northern limit of its range in Cumbria, since this region coincides with the northern limit of its foodplant, Buckthorn *Rhamnus cathartica*.

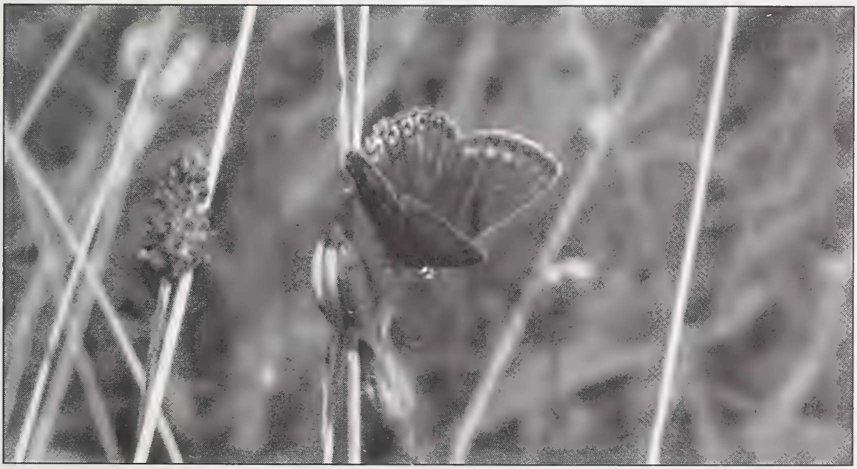

Figure 4. Colonies of Northern Brown Argus *Aricia artaxerxes* in northern England are the *salmacis* form, which can be distinguished from the typical Scottish form by the lack of white forewing marks and more distinct spotting on the undersides.

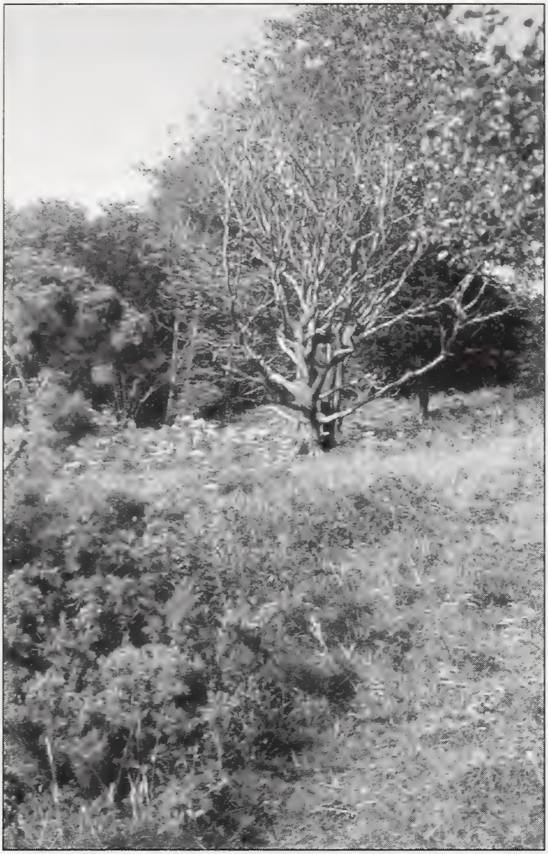

Figure 5. This hillside meadow abounded with literally hundreds of Silver-Y Moths *Autographa gamma*, a profusion of Graylings *Hipparchia semele*, and occasional fritillaries that came to feed at thistles.

While cooling off against the base of a solitary Oak tree for a few minutes I noticed a brown butterfly flying low among the grasses, which, having seen large numbers of Common Blues *Polyommatus icarus*, I took to be a female of that species. On closer inspection it turned out to be a fine specimen of the Northern Brown Argus *Aricia artaxerxes*, which was duly photographed (Figure 4, Plate 6).

Several very fresh specimens of the Scotch Argus *Erebia aethiops* were seen in the more shaded conditions at the bottom of the hill, but the butterflies were so active that they disappeared as soon as we approached them. After a further fruitless search for the fritillary, we ascended the hill, and finally, sailing above the thistles at the top of the slope was a High Brown Fritillary. After slowly following the specimen for over 10 minutes, it finally got used to my presence and I was able to get a few photographs (Plate 6).

I made a second visit to the site on the afternoon of Friday 8th August. The woodland walk to the meadow from the car park took about 10 minutes, and along the way I saw a solitary Scotch Argus feeding at Ragwort in a clearing. Upon arriving at the meadow, which was the Heathwaite section of the reserve, I walked among the clouds

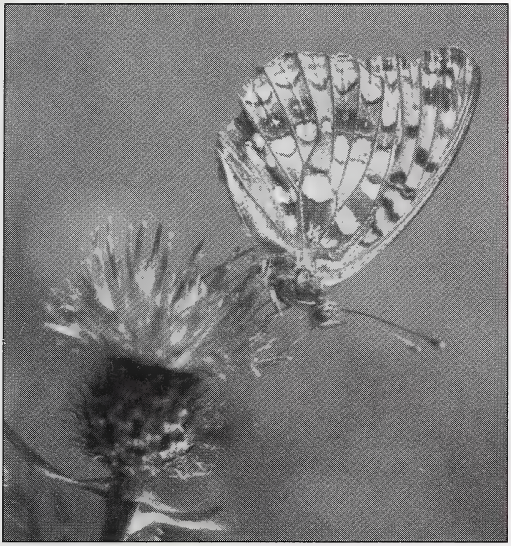

Figure 6. If the diagnostic underside of the butterfly cannot be seen, the outer edge of the fore wings of the High Brown Fritillary *Argynnis adippe* are less rounded than those of the Dark Green Fritillary *Argynnis aglaja.* This proves to be a useful feature when the butterflies can only be observed from above.

of Silver Y's, Painted Ladies, Common Blues and the typical grassland species, but could see no fritillaries. I made my way through a section of woodland to the slopes on the other side of the Knott, which were characterised by bare outcrops of limestone rock. What I thought were sun-bleached Meadow Browns *Maniola jurtina* turned out to be Graylings in profusion. These appeared to be smaller than specimens that I had encountered on the south coast, and with their cryptic colouration, they disappeared from view as soon as they landed on the limestone outcrops, which they shared with an abundance of Wall butterflies. The view from the hillside was stunning, and revealed the vast expanse of sand flats that were exposed in Morecambe Bay at low tide (Plate 6). At the top of the hill was a meadow with thistles, bramble and Ragwort flowers (Figure 5) which immediately produced a large fritillary.

This proved to be a Dark Green Fritillary (Plate 6), only identifiable after I had managed to get close enough to see its dark green underside. I finally managed to catch up with a High Brown Fritillary, which revealed the diagnostic row of red-brown spots on its underside (Figure 6.) It is possible to distinguish between the High Brown and Dark Green fritillaries from above: the outer edge of the fore wings of the High Brown Fritillary are less rounded than those of the Dark Green Fritillary.

I spent the rest of the afternoon watching the fritillaries flying in the meadow and along the edge of the woodland. In contrast to other butterflies, whose fluttering flight appears much laboured by comparison, the larger fritillaries are true masters of the air. They have the ability to either sail or soar on the wind above the treetops, or perform the most delicate and controlled of manoeuvres to float down to a nectar source.

For those who have an interest in the butterflies described, Arnside Knott is well worth a visit. It is probably best to go in mid-July for the High Brown and Dark Green Fritillary to catch them at their best, although a trip in the first week of August, as above, may well lead to the observation of all species mentioned.

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* * *

Book Review

The Field Guide to the Dragonflies and Damselflies of Great Britain and Ireland

by Steve Brooks, illustrated by Richard Lewington, published by British Wildlife Publishing, 2004, 142 pp., softback £18.95 (post free). ISBN 0 9531399 0 5. Available British Wildlife Publishing, Lower Barn, Rooks Farm, Rotherwick, Hook, Hampshire RG27 9BG; tel: 01256 760663; fax: 01256 760501; e-mail: enquiries@britishwildlife.com

This new edition, which appeared in April this year, now contains the most recent additions to the British list, the Willow Emerald Damselfly *Lestes viridis* and the Southern Emerald Damselfly *Lestes barbarus.*

The long list of plaudits for this highly acclaimed Dragonfly Guide continues to grow, and rightly so, but what is it about this book that has made it such a praiseworthy success? From a personal viewpoint, and as someone who has a passion for these beautiful insects, the briefest study of its pages immediately conjures up thoughts of summer days, wading in the margins of well-reeded waterways in pursuit of the aerial and the aquatic. From a purely objective viewpoint, the key word is accessibility. This book provides for the new enthusiast a journey into the world of dragonflies, and for the expert, an authoritative text, lavishly illustrated with the pristine artwork of Richard Lewington, which is the epitome of anatomical perfection.

The journey for the new enthusiast begins with the quest for a suitable identification guide, and the annotated illustrations and diagrams in this field guide provide an unprecedented degree of support for the beginner. The book itself contains more than 280 colour illustrations, which make it a visually accessible, not to mention an aesthetically pleasing work. The identification guide introduces the life histories of dragonflies and damselflies, and the habitats in which they can be found. The enthusiast's journey continues with a developing interest in the distribution of species and the pursuit of new species. Each species account in the book has a distribution map complete with details of its flight season, and the chapter on "Regional Guides" provides a gazetteer of the best dragonfly sites to visit in each area of the country. When the adults are on their way to being mastered, an interest in the identification of the aquatic larval stages may ensue, and this is catered for by the comprehensive illustrated larval key, followed by two pages of high quality photographs showing the larvae of various dragonfly and damselfly species. A growing interest in the ecology and behaviour of each species is satisfied by detailed information provided in the individual species accounts. Finally, as the enthusiast begins to gain an appreciation of the importance of preserving habitats which contain populations of these remarkable creatures for the benefit of future generations, the book goes on to provide information about the status and conservation requirements of each species. In short, a comprehensive, authoritative, and superbly illustrated masterpiece.

Peter Sutton (7388)

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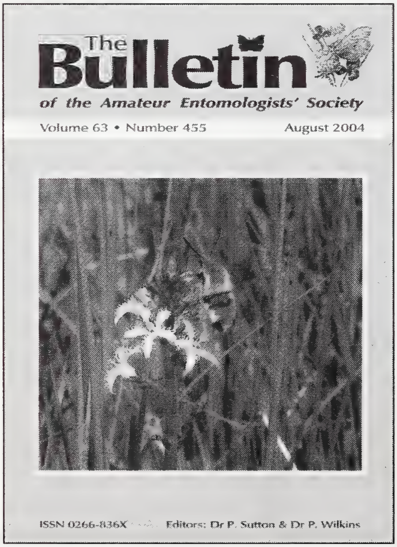

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Photograph: John Walters (Digital camcorder: PC120e)

Bulletin Cover

The cover picture for this issue shows a Narrow-bordered Bee Hawkmoth *Hemaris tityus* taking nectar from Bogbean *Menyanthes trifoliata* at a southerly site on Dartmoor in South Devon. The foodplants and habitat requirements of this striking species are the same as those of the Marsh Fritillary *Euphydryas (Eurodryas) aurina*, in whose company it can often be found. Both species, which have become increasingly scarce in recent times, have suffered from the effects of agricultural intensification, particularly the wholesale loss of unimproved grassland during the twentieth century.

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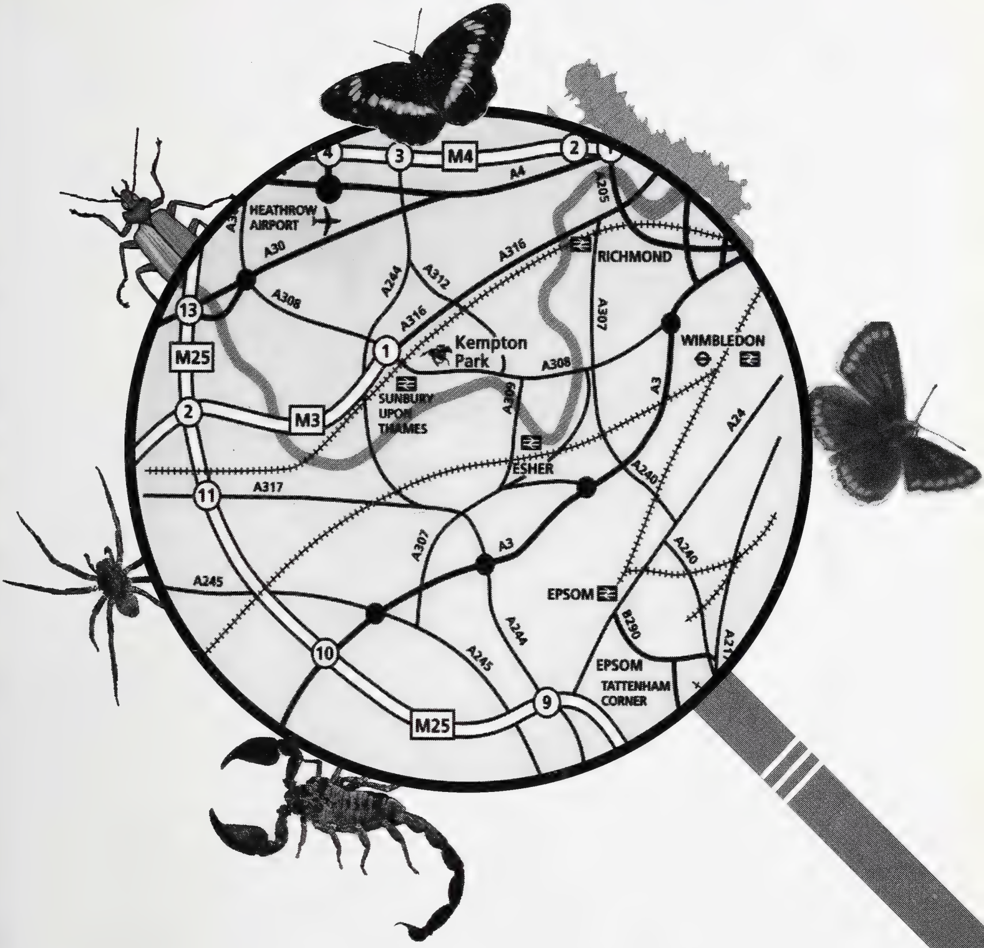

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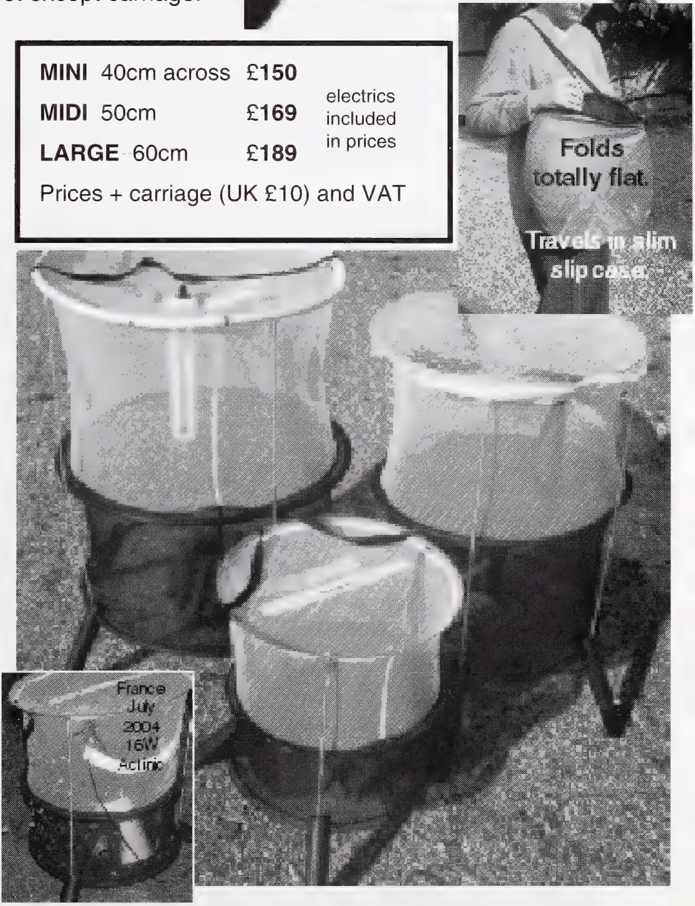

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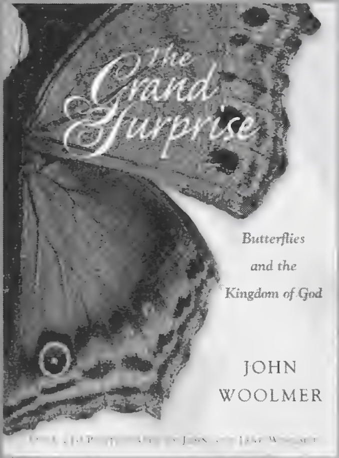

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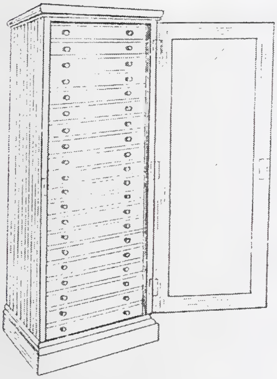

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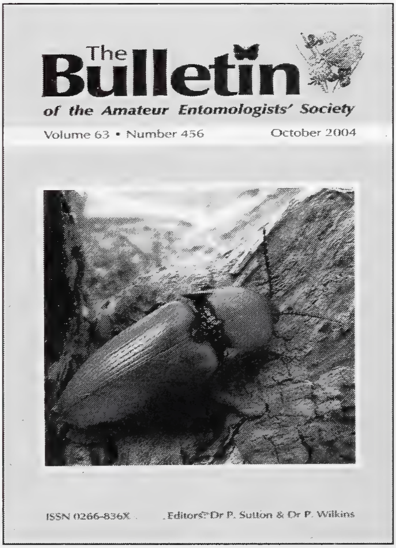

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Photograph: Peter Sutton

The cover picture on this issue of the *Bulletin* shows a specimen of the very rare click beetle, *Elater ferrugineus* L. (RDB1, endangered), which, at a colossal 17-25 mm, is the largest and arguably the most impressive species of the Elateroidea to be found in the British Isles. In spite of this, (and perhaps because it is so seldom encountered as an adult), it is curiously omitted from a number of texts (e.g. Linssen, 1959; Harde, 1984; Chinery, 1986) and there are no useful illustrations or photographs of this species in modern British coleopteran literature. Hyman and Parsons (1992) state that during the 20th century, this species was "recorded only from Windsor Great Park and Windsor Forest, though recently discovered at a new locality (1987) in Suffolk." The specimen shown on the cover of the *Bulletin* was discovered at a new locality by Dr Jonty Denton this summer, whilst examining wood mould in the trunk of a tree at Bushy Park in Middlesex.

The Bulletin
of the Amateur Entomologists' Society

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Editorial

We are now well into autumn and the AES Exhibition is over for another year! I found it one of the best for many years. I am sure many members would join me in thanking Wayne Jarvis (and his band of helpers) for all his hard work in making it such a success.

This issue of the *Bulletin* contains a bumper section of 'Announcements, Requests and Replies'. The whole of this section is worth reading, but please note the comments about the AES awards and there is an important announcement from Basil Harley about Harley Books.

On the subject of 'Announcements, Requests and Replies', it is pleasing that a former 'Request' has now spawned an article in the Bulletin. In June 2003 (Volume 62, Number 448) Jenny Boncey requested that AES members might help her to record the insects on her land in south-west France. Frank Botterill's article in this issue is the first account to stem from this. We hope to have an article on the beetles on site in the near future!

Phil Wilkins

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The Ermine Moth

by Donald H. Smith

"Westland". Westfields, Kirbymoorside, York YO6 6AG.

On July 13th 1985, The Ryedale Naturalists' Society visited Rosedale in the North Yorkshire Moors and witnessed a most unusual looking Bird Cherry, *Prunus padus* – totally defoliated and swathed with webbing. Lines of webbing led downwards from all branches converging into broad avenues down to the main trunk. The unit strip was a band or ribbon of cocoons adhering side by side. At least two further strips had been formed at either side. Then on top of this broad, multi-strip ribbon, a second layer had formed, then a third and so on. This formation condemned the middle strip(s) by sealing off the exit caps and also one of the outer strips, depending on which end emergence would take place. The eventual mortality would be great and would condemn not only the moths in the inner strips but almost all their parasites as well. Unlike the moths, whose only exit was via the end of the cocoon, the smaller parasites and all the chalcids could escape by chewing small holes in the sides of the cocoons. It is conceivable that some, trapped in the penultimate upper layer, might escape by chewing a hole in the lower part of the top cocoon, bypassing the dead occupant and finally escape via a third hole. The trunk held three major strips, one near the base and two below upper limbs with four or five smaller strips and a number of other scattered clumps. A very rough estimation, taken from a number of different viewpoints and with the help of a tape measure gave a combined strip 2.5 metres long by 5cm wide and 3cm thick. Each cocoon was approximately 2mm wide by 9mm long.

A clump of cells approximately 5cm by 3cm by 8cm long was detached, brought home and placed in a glass fronted breeding cage with air holes covered by fine muslin. During the next two to three days, the mass was carefully separated to ensure minimal end to end joining.

The emergence of the moths was an overwhelmingly nocturnal event. Though a small number did emerge during the day, this may have been due to the relative darkness below the cocoon mass. The moths were determined as *Yponomeuta evonymella*. Emergence was achieved by forcing open the end of the cocoon, while the chalcids bit a round or oval hole in the side. Unlike the former, the parasites appeared to have limbs and wings fully developed and working as soon as they emerge.

Though pure conjecture, wind borne pheremones seemed to be necessary for the moths' final development. The frenzied activity in the breeding cage which continued in the pooter after collecting ceased entirely once the pooter was opened outdoors. One or two proceeded quickly to the rim and flew off regardless of how the pooter was held – upside down, towards the light or away from it. The majority commenced vigorous preening, wing inflation taking approximately 25 minutes. The wings were then extended with a quick flick and held vertically over the body for some time. A vertical surface seemed to be an essential prerequisite for this activity. If placed on a raised but level surface the moth would climb over the edge so that it could hang with wings pointing downwards. Not one instance was observed of any parasite wing drying or stretching, all appeared fully flighted.

Apart from *Ageniaspis fuscicollis*, which for six days emerged in countless numbers, the majority of the remaining chalcids were set with wings extended and legs displayed each day in order to note wing length and venation ratios, markings and colours of femora, tibia and tarsus and body colours. These details fairly quickly separated into thirteen relatively distinct groups so that a group code number could be given thus enabling a daily graph to be compiled. At this point in time no identifications had been made but the ichneumons were much easier to categorise. The chalcid stigmal(s), marginal(m) and post marginal(p) wing veins were measured and from these measurements, ratios s:m and p:m were calculated. In some cases the ending of the post marginal vein was obscure and in that case the last large bristle was taken as the ending. Where the stigma ran obscurely into the stigmal vein, the total length was taken. Measurements taken on females (where distinguished) included the ovipositor.

I am indebted to Mr. Bill Ely who very kindly identified the ichneumons, some of which, he explained, had no published keys available. Dr R. R. Askew kindly provided the names of most of the chalcids and I am most grateful to both these gentlemen. The list of identifications is as follows:

Chalcids
Pteromalus semotus
Pteromalus chrysos
Tetrastichus evonymellae
Dibrachys cavus
Dibrachys ?boarmiae?
Trichomalopsis sp.
Trichomalopsis ?submarginatus?
Ageniaspis fuscicollis

Ichneumons
Horogenes sp. (larger)
Horogenes sp. (smaller)
Herpestomus brunnicornis
Mesochorus sp.
Phygadeuontinae sub family
Pimpla turionellae
Microgasterinae sub family

My only reason for resurrecting this account, which I don't recall publishing in detail previously, is because of the data embodied in the charts which may still be of interest to hymenopterists. Details of measurements taken on all the species are still available. It was gratifying to eventually find that the code numbers allocated to the chalcid measurements on which the chart was built up on a daily basis turned out to fit the eventual names.

Wing expansion in progress

Yponomeuta evonymella

Pteromalus chrysos

	Normal moths	Deformed moths	Horogenes small		Horogenes large		Herpestomus brunnicornis		Mesochorus sp.		Phygadeu' sub family		Pimpla turionellae		Microgast' sub family
Jul. 17	Cocoons collected late afternoon														
18			11	6											
19			14	8											
20			6	10											
21	3		7	8											
22	135	36	4	3					3	1					
23	208	9	5	1					1						
24	175	6	4	14						1					
25	36	3	3	6						2					
26	13	2	5	4			1								
27	3		4	5			1								
28	2	1		1			1								
29			1	2			2								
30				2			1								
31				1											
Aug. 1				1			2								
2							1								
3											1				
4							1								
5										2					
6					3	5				1					
7					2	7	1								
8					2	12	1								
9					4	13	2								
10					3	2	3			1	1				
11						2									
12					1	2	3								
13					1	3	1						1		
14								1							
15															
16								5							1
17								1							
18								1				1(a)		1	
19								4				1(a)			1
20															
21								3					1	3	
Aug. 22nd to Sep. 4th											3	3	13	13	

The three Phygadeuontinae _ from Aug. 2nd to Sep. 4th include one further apterous specimen. (a)=apterous

	Pteromalus semotus		Pteromalus chrysos		Tetrastichus evonymellae		Dibrachys cavus		Dibrachys ?boarmiae	Trichomalopsis ?submarginatus	Ageniaspis fuscicollis
Jul. 17	Cocoons collected late afternoon										
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29						1					
30											
31						1					12
Aug. 1		1				2					a
2		2									a
3	1	1				7					a
4	2					1		4			a
5	2							2			a
6				1							a
7						5	11	2		1	200+
8						3	1	2			219
9			1		2	2	1	6			74
10				1		6				1	4
11											1
12		1				1		5			
13						8					
14	1					3					
15						2		3			
16								2			
17	1										
18	1			1			2	1			
19	1		1	4					1		
20								2			
21	2										
to 4th Sep.	1	3	7	8		1		2			

The 'a' in the last column refers to emergence in such abundance as to be uncountable.

The Dung Beetles (Coleoptera: Scarabaeidae and Hydrophilidae) of Ayrshire, Scotland

by Lisa Webb

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Dairy farming shapes the rural landscape of Ayrshire, where silage and grazing pastures provide a mosaic of green fields. In those fields where livestock dung is plentiful, a valuable resource is provided for the insects that utilise dung for all or part of their life cycle.

Fabre (1911) described dung beetles as: "the dealers in ordure, the scavengers of the meadows contaminated by the herd". This 'scavenging' of dung by beetles is extremely beneficial as it accelerates dung decomposition on pastures thus ultimately improving nutrient cycling. Although the endemic species of Britain are small in comparison to the larger dung-rolling African species, they nevertheless cause rapid degradation of dung when present in large numbers. With their many invertebrate inhabitants, dung pats provide bountiful feeding grounds for predatory beetles e.g. Staphylinids, Carabids and Elaterids, as well as for vertebrate predators.

Dipteran species are among the first invaders of dung, with many different species using the dung for oviposition (Skidmore, 1991). Common dung-breeding species include the dung-flies (Scatophagidae) and lesser dung-flies (Sphaeroceridae). The dung beetles, accompanied by their parasitic mites, also arrive at dung when it is very fresh although there is an element of succession within the dung beetles themselves. Early successional species include *Aphodius depressus* (Kugelann), *A. prodromus* (Brahm), *A. rufipes* (L.), *A. sphacelatus* (Panzer), *Sphaeridium lunatum* Fabricius, *S. scarabaeoides* (L.) and *Cercyon* species (Gittings and Giller, 1998, Hanski, 1980). Both *A. ater* (Degeer) and *A. rufus* (Moll) are mid-successional species and *A. fimetarius* (L.) and *A. fossor* (L.) are late successional species (Gittings and Giller, 1998). Once dung is in an advanced state of degradation, soil invertebrates, including earthworms, begin to move into the dung pat.

In cattle-grazed pastures in Ayrshire (Grid references NS32, NS42, NS43, NS52),

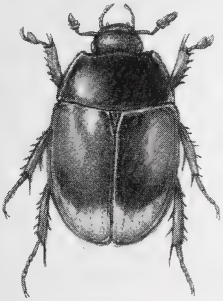
Aphodius fossor

ten species of *Aphodius*, six species of *Cercyon* and two species of *Sphaeridium* were recorded from April to July in 2002 and 2003. The dung beetle fauna was sampled using dung-baited pitfall traps. These traps are ideal for use by anyone who wishes to record dung insect fauna while avoiding the messier procedure of directly sampling dung. Incidentally, these baited traps were excellent at trapping yellow dung flies, *Scatophaga stercoraria* (L.), too.

A dung-baited pitfall trap.

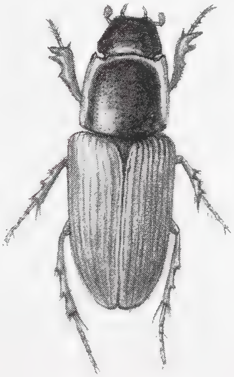
The *Aphodius* recorded ranged in size from 4mm (*A. pusillus*) to 13mm (*A. rufipes*). The most common Scarabaeid species were *Aphodius depressus* and *A. prodromus*. The former species was abundant in all months from May to July and Jessop (1986) described it as the most common *Aphodius* species in Scotland. In contrast, *A. prodromus* displayed a strong seasonal pattern in abundance. It was frequently trapped in large numbers in late-April and May (sometimes as many as 1000 individuals in one trap!) but it occurred in far fewer numbers in June and July. *A. sphacelatus*, which is morphologically similar to *A. prodromus*, had the same seasonal pattern as *A. prodromus* although it was not as abundant. Both species are described as 'spring and autumn' species (Gittings and Giller, 1997), but this sampling period only encompassed the 'spring peak'.

One of the largest *Aphodius* species trapped was *A. rufipes* and this late-summer species occurred in highest numbers throughout June and July. The early summer species *A. ater* did not show any peaks in abundance from April to July although it may not have been recorded in high enough numbers to detect any seasonal patterns. *A. rufus* has a locally common distribution in Scotland (Jessop, 1986) and it was recorded in low numbers only in one pasture adjacent to woodland. Another species described as local is *A. pusillus* (Herbst), which was only observed in a few pastures in one area. In a Finnish study, *A. pusillus* exhibited limited dispersal ability and existed as a metapopulation (Roslin and Koivunen, 2001). Perhaps this might explain its restricted occurrence in my study area and it would certainly be interesting to study the spatial distribution of this species in more detail. Of the three remaining species recorded, *A. fimetarius, A. fossor, A. lapponum* Gyllenhal, all occurred in relatively low numbers. Both *A. fimetarius* and *A. lapponum* have been described as common species in Scotland and *A. fossor* as uncommon in southern Scotland (Jessop, 1986).



Sphaeridium scarabaeoides

Cercyon pygmaeus



Aphodius prodromus

The *Cercyon* are a group of small, rather convex species ranging in size from 1.5 – 4.5mm. Of the species trapped here, *Cercyon melanocephalus* (L.) is perhaps the most distinctive with its reddish elytra and black triangular colouration over the scutellar area.

C. melanocephalus (L.) and *C. atomarius* (Fabricius) were the most common hydrophilids, followed by *C. lateralis* (Marsham) and *C. haemorrhoidalis* (Fabricius). The two species *C. lugubris* (Olivier) and *C. pygmaeus* (Illiger) were recorded in relatively low numbers. The *Cercyon* did not show any distinct seasonal patterns of abundance although there was a slight increase in abundance over the summer, with most trapped in July. *Sphaeridium lunatum* and *S. scarabaeoides* occurred in low numbers in all months.

Some of these dung beetles rely on dung for all of their life cycle while other species are more general and will perhaps only adopt coprophagy at a particular stage of development. *Aphodius* adults are coprophagous and, depending on species, their larvae are coprophagous or saprophagous. For example, the larvae of *A. prodromus* and *A. sphacelatus* often develop in soil and feed on decaying plant matter (Gittings and Giller, 1997). Of the Hydrophilids commonly found in dung, *Sphaeridium* have been described as specialists and *Cercyon* as generalists (Koskela, 1979). Adult *Sphaeridium* feed on dung while their carnivorous larvae feed on fly larvae within the dung (Sowig, 1997). *Cercyon* can feed and develop in all types of decaying matter including dung (Hansen, 1987).

Dung availability is important for the sustainability of dung beetle populations because once a beetle has emerged it must then be able to locate dung in order to feed and reproduce. The 'suitability' of dung is also crucial because different species can have varied preferences for dung that are guided by their life cycle requirements. For example, the moisture content of dung is an important factor as *A. ater, A. fimetarius, A. rufus* and *A. fossor* all prefer to oviposit in the drier parts of dung (Gittings and Giller, 1997). *Sphaeridium* are able to exploit dung that is too wet for some species (Anderson, Merritt and Loomis, 1984) and the author has noted that *Cercyon* show a preference for moister dung.

Potential threats to dung beetle fauna include the use of avermectin-based anthelmintics in livestock. Avermectin residues remain insecticidally active once passed into the faeces of the treated livestock, therefore there is concern that exposure to residues may adversely affect dung beetle populations. The author is currently researching avermectin effects on dung beetles as part of a PhD funded by the Scottish Agricultural College and the Royal Society for the Protection of Birds. One of the research aims is to determine whether these residues have a significant negative impact on dung insect populations or whether the populations can remain resilient to any localised declines.

In conclusion, dung beetles are fascinating insects and they also have an important function in farmland ecosystems. Their role in dung breakdown and as valuable prey for vertebrate predators should not be underestimated. To quote Fabre (1911) once again: “Notwithstanding their filthy trade, the dung beetles occupy a very respectable rank”.

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Farming yesterdays – obscure and curious items of entomological literature, part 10

by Richard A. Jones

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A continuing series of some strange books that have found their way into my library. Not useful key works by important entomologists, but strange oddities, quaint, off-beat or just plain entertaining.

Notebook of agricultural facts and figures for farmers and farm students by Primrose McConnell, 11th edition, 45th thousand, thoroughly revised, London, MacDonald & Martin, 1930.

The first thing to strike me about this book was the unusual name of the author, for this was not a farmer's daughter or country lady writing of quaint rural practices in her spare time, this was Mr Primrose McConnell, B.Sc., yeoman farmer of North Wycke, Southminster in Essex, and judging from the number of editions and reprints that the book had gone through, he certainly knew his stuff.

The book is printed in minute type and is packed through all its 540 thin pages with facts, tables, advice, schedules and instructions. There are a few diagrams, such as those that demonstrate how to nip cuts in the ears of an animal to show its stock number, how to age farm stock from the dental formula and how to triangulate distances and calculate acreage using the 22 yards of ironmongery called Gunter's chain before the development of the modern tape-measure.

There are endless strange and interesting (or obscure) countryside facts to be gleaned. I often puzzled on the groat, but now I know it was 4d, and I am glad to be informed that a Scottish lippie or forpat is half a gallon. In the 'miscellaneous' section is a table of ice thicknesses, stating that ice needs to be 1½ inches thick to support a man, 4 inches thick to support cavalry and light guns, 10 inches thick to support a crowd and 18 inches thick to support a railway train. Quite how useful this is to the farmer is not clear.

Not surprisingly, the entomological content of the book is limited to a few tables of farm animal, crop and garden pests, with suggested remedies. This was a time when warbles, bot flies, lice, ticks, keds and all manner of other dread insect pests tormented the livestock. Ingredients for the various dipping potions include arsenic, sulphur, paraffin, carbolic acid and pitch oil although the last two substances were apparently complained about by wool merchants. Other recipes contain equally odd substances; my favourite is the calf diarrhoea cordial. Mixed into 1 pint of peppermint water are 2 oz powdered chalk, 1 oz powdered catechu (a powerful astringent made from leaves and shoots of a south-east Asian plant), 1/2 oz powdered ginger and 1 drachm of powdered opium. Presumably they were all available from the local agricultural stockist.

For crop pests there are none of the many chemical sprays we know today, the most vigorous methods involve spraying with nicotine, soft soap, soot or lime, although arsenic is mentioned occasionally. Many of the suggestions are practical, based on husbandry rather than pesticide. To get rid of the grain weevil (*Calandra granaria*) the reader is advised to turn the grain regularly, paint the granary white and winnow out and destroy the hollow (and therefore light) affected grains. For troublesome cockchafer (*Melolontha vulgaris*) infestations he urges the ploughman to expose the grubs by cultivation, apply forcing manures and finish the land with a Cambridge roller. In the equivalent forestry table, to get rid of the great elm bark beetle (*Scolytus destructor*), the author suggests 'scrape off rough bark, so as to cause an extra flow of sap, if not numerous'. Whilst the suggested treatment for pine sawflies (*Lophyrus pini*) attacking timber trees is 'encourage birds'. How very right on!

* * *

A NOTE FOR YOUR DIARY

The AES AGM and Members' Day

Saturday 23 April 2005

at the Royal Entomological Society
41 Queen's Gate, London

WATCH THE BULLETIN FOR MORE DETAILS!

Human-biting mosquitoes

by Dr Jolyon Medlock

HPA, Porton Down, Wiltshire

Rupert Adams, MCIEH (12435)

15 Woodside Terrace, Northwich, Cheshire, CW9 8DA.

The recent emergence of West Nile virus in North America has heightened concerns over the emergence of mosquito-borne viruses in new geographic locations. In the United States, more than 40 different species of mosquitoes have been implicated in the transmission of the virus. In the British Isles more than 30 different species have been recorded with several members of the genera *Anopheles, Aedes, Culex, Culiseta* and *Coquilletidia*. The Health Protection Agency (HPA), together with the Chartered Institute of Environmental Health (CIEH), and others, are seeking to better understand the incidence of mosquitoes biting humans in the UK through the development of a dedicated database. AES members are invited to assist with this task. In order to achieve this we require all reports of nuisance biting mosquitoes to be catalogued through the National Pest Advisory Panel Website (http://www.cieh-npap.org.uk) detailing specific information on the date of collection, specific location (postal address, grid reference), general location (nearest town/village and land use e.g. nature reserve), local habitat (woodland, marsh, lake etc), name and contact details of individual submitting record. Those able to positively identify species themselves can do so and enter the details. Where species cannot be identified they can be sent to Rupert Adams, Principal Environmental Health Officer, Vale Royal Borough Council, Wyvern House, The Drumber, Winsford, Cheshire CW7 1AH with collection details and a contact name/email address and telephone number. All mosquitoes collected will then be speciated to assist with developing a picture of nuisance biting mosquitoes in the UK.

In addition to our endemic mosquito fauna, the possibility also exists for the importation of exotic mosquitoes that will likely cause a greater biting nuisance and may become involved in the transmission of infectious diseases. The Asian tiger mosquito, *Aedes albopictus*, is one of a number of mosquitoes that has managed to travel the world by laying its drought-resistant eggs in old tyres that are subsequently exported. In their native Asia, *Ae. albopictus* breed in transient water pools in the leaf-axils of banana trees, discarded coconut husks and old tin cans. Due to increased urbanisation the mosquito has taken to breeding in more man-made situations taking advantage of water collecting in piles of discarded tyres in urban areas, promoting their ability to bite humans and transmit infectious diseases such as dengue virus.

Due to the increased global trade in used tyres (for re-treading, recycling and energy production), and coupled with the mosquito's ability to lay eggs that withstand extended periods without water submersion, the mosquito has been able to travel to new locations and establish. In addition, *Ae. albopictus* is able to undergo a period of hibernation or 'diapause' during unfavourable climatic periods thus allowing the mosquito to overwinter in more northerly latitudes in a dormant state. Furthermore, like most insects, mosquitoes are temperature dependent and will respond favourably to increased temperatures brought about by climate change, thus promoting their establishment and extending their activity periods.

Aedes albopictus was first recorded in the US in 1985 in Houston having been imported on used tyres from Asia, over the next three years it had spread across southern and eastern states along the interstate highways through the internal transport of tyres. It is now established in more than 25 US states (where it has become involved the transmission of a number of arboviruses – arthropod-borne viruses) and has appeared in Central and South America, Africa, Australasia. In addition to an importation into Albania in 1979 (possibly from China), the mosquito appeared in Europe at a number of sites in northern Italy in 1990 having been imported from the US. It has since become established in northern and central Italy, developing behavioural changes that promote human biting. Since 1999 the mosquito has appeared in France, Belgium, Montenegro, Israel and Switzerland; countries such as France have managed to eradicate the mosquito through surveillance and insecticide spraying of imported tyres.

Survival and seasonal activity modelling carried out by the HPA have shown that the UK's mild winter temperatures may allow *Ae. albopictus* to overwinter with possible activity occurring during the summer months. *Aedes albopictus* is a prolific man-biter and quite at home in urban situations thus promoting its ability for transmitting infectious diseases. There is no current evidence of transmission of infections to humans in Europe yet, but the transmission of a number of arboviruses (e.g. West Nile virus) in the US have been confirmed and the possibility exists for possible transmission of certain infections to humans in Europe.

To date there is no evidence that *Ae. albopictus* has been imported into the UK, but this is perhaps more down to the lack of surveillance than the lack of importation of used tyres from endemic regions. *Aedes albopictus* is not the only exotic mosquito that has mastered this route of global transportation, other disease vectors (transmitters of infections) have appeared in France. Pro-active recording of nuisance mosquito biting in the UK and pre-emptive surveillance of imported tyres for exotic mosquitoes are important strategies for identifying and eliminating problem and exotic mosquitoes before they pose public health consequences now or in the future.

* * *

Moth Recording in Tarn-et-Garonne, south-west France

by Frank Botterill (6226)

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Introduction

Bulletin Number 448 contained a short piece (since repeated) which caught my attention, from member Jenny Boncey. Jenny is involved in renovating a traditional-style farmhouse in the département of Tarn-et-Garonne in southwest France and was making an offer which I wasn't able to refuse – free accommodation in return for a survey of insects. Because my wife and I were away visiting our son in France at the time of publication, I didn't read the article until half way through July. However, two quick e-mails later and it was all arranged – another trip to France in the second half of September to do a moth survey (plus a second visit to see our new grand daughter!)

The Site

The farm of Barrau is part of the tiny hamlet of Haumont, about an hour's drive northwest of Toulouse, though we took the three day route from South Yorkshire.

The farmhouse stands in its own plot of about 16 acres and has a small out-building nearby, totally rebuilt and equipped to provide holiday accommodation for two (fairly friendly!) people.

The land itself falls into several different areas:-

- The highest part is a sizable flat meadow area, with many herbs, featuring Viper's Bugloss.
- In a secluded corner of this meadow is a very large pond, sadly reduced by the drought of 2003 to an area about the size of our dining table and amply provided with my least favourite French starter – edible frogs!
- There is a second meadow area, falling steeply away into a valley with cultivated fields beyond. Both meadows seem relatively un-improved, but are in need of a grazing or mowing regime.
- There are two large areas of mature oak woodland, both on steep slopes, separated by a 3 or 4 metre wide grassy lane.
- This lane divides at the foot of the slope, to continue around the base of each area of woodland. The lanes provide opportunities for woodland edge shrubs and more herbaceous plants.

- In the centre of the property, between top-meadow and woodland, is the house, with flower and herb gardens around. The guest bungalow faces the front of the farmhouse, but the back door opens on to a small sitting area at the edge of one of the woods.

Equipment

With just two people in an estate car, there was no shortage of space, so I took along most of the gear I would normally use at home, consisting of:-

- A selection of tubes, jars and nets.
- My portable Honda 2 stroke generator, with sheet, 160watt mercury-tungsten blended lamp and fisherman's rod-rest.
- Home built light trap using 125watt mercury vapour lamp in a Robinson style funnel, mounted in a large cardboard (for lightness) computer monitor box with plywood lid, measuring 50 x 40 x 50 cm approx.
- A small collection of reference books – see References.
- Boots, torches and folding seats.
- A pot of homemade sugaring mixture.
- Hand lenses and new digital camera.

Methods

Despite the very hot days and lateness of the visit (we arrived on the 16th of September), nighttime temperatures held up very well. We were easily able to sit around the portable light in the evenings wearing only shorts and T-shirts. Daytime temperatures were generally too high for us to venture out for long in full sun.

Every evening, except the last, for the six nights of our stay we set up the portable lighting equipment in a different part of the property and sat around recording for around three hours. Separate species lists were compiled in this way for the pond side, top-meadow, steep woodland near the house and foot of the steep lane.

For our final working night, Jenny had invited some of her friends to come and join us mothing and to stay overnight to open the trap in the morning. We selected a spot half way down the steep lane where there was room for all 10 of us to gather round the sheet, and this provided us with a list from another different site.

Each night, the static trap was switched on at dusk, before setting off with portable gear, and turned off again around 7.30 the following morning, the catch generally being examined straight away. On the first night, the trap was placed at the full extent of its cable from the bungalow, just reaching into the adjacent woodland. By the second night, an extension cable had been found enabling us to re-site the trap slightly further away, just on the edge of this woodland, further up at a flatter site where it was much easier to examine. Thus, over the six nights, two more species lists were compiled from these two areas.

During the daytime, an occasional watch was kept on the flowers and herbs, revealing a list of 8 butterflies and several day-flying moths, most numerous of which (by far) was Scarce Bordered Straw.

I also managed to try out the sugaring mixture on a couple of occasions, but as so often happens with sugaring, it proved to be singularly ineffective; and there was little incentive to persevere since light trap catches were so good.

At home I usually use a tea chest as a catching box and find this better than a Robinson trap because of the greater space inside. In France, I found the computer monitor box performed even better, with plenty of room for egg boxes. Luckily, there was no rain and very little wind, which could have been difficult with a cardboard box.

Results

Late September proved to be an interesting time to be in southern France, since many larger insects had reached maturity and were still around. Notable and generally easily recognisable non-moth species recorded included European Swallowtail, Painted Lady, White Admiral, Long-tailed Blue, Mallow Skipper *Carcharodus alceae*, several different bush crickets, bloody-nosed beetle, sexton beetle, the weevil *Curculio elephas*, potter wasp, hornets and the hornet-mimic hoverfly *Milesia crabroniformis*, various bugs including the fire bug *Pyrrhocorus apterus* and the striped shield bug *Graphosoma italicum*, the spider *Argiope bruennichi* and good numbers of praying mantids. These latter were all females, prompting me to wonder if mating had already taken place and the males been devoured!

Separate moth lists were compiled for each site where recording took place during the week, but naturally enough, there was a very large over-lap of species between the different sub-sites, and only the final composite list is published here.

MOTHS RECORDED AT HAUMONT TARN-ET-GARONNE FRANCE September 16th to 21st 2003

	Scientific Name	English Name	French Name	Nos	Status (in Britain)	Larval Foodplants / other comments
	Family	Hepialidae				
15	*Hepialus sylvina*	Orange Swift		9	common	roots
	Family	Gracillariidae				
286	*Caloptilia alchimiella*			1		oak
	Family	Yponomeutidae				
460	*Ypsolopha parenthesella*			1	common	oak
	Family	Oecophoridae				
658	*Carcina quercana*			5	common	oak
	Family	Tortricidae				
937	*Agapeta hamana*			1	common	thistles, roots
993	*Clepsis pallidana*	(French sp. - false number)				mugwort, golden rod etc.
1036	*Acleris forsskaleana*			3	common	sycamore
1259	*Cydia fagiglandana*			3	common	beech, oak
1260	*Cydia splendana*			>20	common	oak
	Family	Pyralidae				
1306	*Agriphila inquinatella*	(A Grass Moth)		>10	common	grasses
1327	*Ancylolomia tentaculella*			2	rare immigrant	grasses
1356	*Evergestis forficalis*	(Garden Pebble)		1	common	crucifers
1359	*Cynaeda dentalis*			1	local in south	viper's bugloss
1360	*Hellula undalis*			1	v. rare immigrant	(only one British record)
1362	*Pyrausta purpuralis*			4	widespread but local	mint, thyme
1364	*Pyrausta sanguinalis*			1	very local	thyme
1365	*Pyrausta cespitalis=despicata*			2	widespread	plantain
1368	*Margaritia sticticalis*			5	rare immigrant	mugwort
1375	*Ostrinia nubilalis*	(European Corn-borer)		2	immigrant, res in SE	mugwort
1395	*Udea ferrugalis*	(Rusty-dot Pearl)		2	immigrant	herbaceous plants
1397	*Mecyna asinalis*			3	coastal in south-west	wild madder
1398	*Nomophila noctuella*	(Rush Veneer)		5	immigrant	clover, knott grass
1399	*Dolicharthria punctalis*			>20	coastal in south-west	herbaceous plants

	Scientific Name	English Name	French Name	Nos	Status (in Britain)	Larval Foodplants / other comments
1400	*Antigastra catalaunalis*			1	rare immigrant	Southern European & tropical
1405	*Pleuroptya ruralis*			3	common	nettles
1408	*Palpita unionalis*			1	rare immigrant	jasmine, olive
1424	*Endotricha flammealis*			1	common in south	trefoils, decaying leaves
1441	*Oncocera semirubella*			>10	common in south	trefoils, clovers
1451	*Etiella zinckenella*	(1451a)		2	rare immigrant	
1452	*Phycita roborella*			1	common	mainly oak
1481	*Homoeosoma sinuella*			2	common in south	plantain - in rootstock
	Family	Lasiocampidae				
1632	*Trichiura crataegi*	Pale Eggar	le bombyx de l'aubépine	1	common	birch, hawthorn, blackthorn etc.
	Family	Drepanidae				
1646	*Drepana binaria*	Oak Hook-tip	le hameçon	4	common in south	oak, perhaps birch
1651	*Cilix glaucata*	Chinese Character	la petite-épine	1	common	hawthorn, blackthorn etc.
	Family	Geometridae				
1678	*Cyclophora puppillaria*	Blair's Mocha		1	mainly immigrant	oak
1682	*Timandra griseata*	Blood-vein	la timandre aimée	3	common	dock, sorrel, knotgrass etc.
1690	*Scopula imitaria*	Small Blood-vein		1	common in south	privet, honeysuckle
1699	*Idaea vulpinaria*	Least Carpet	la phalène rustique	1	local in south	ivy, clematis
1702	*Idaea biselata*	Small Fan-footed Wave	la truie	1	common	dandelion, plantain etc.
1707	*Idaea seriata*	Small Dusty Wave		1	common	dandelion, dock - on withered leaves
1708	*Idaea dimidiata*	Single-dotted Wave	la phalène écussonnée	1	common	herbaceous plants - withered leaves
1713	*Idaea aversata*	Riband Wave	l'impolie	5	common	low herbaceous plants
1714	*Idaea degeneraria*	Portland Ribbon Wave		1	RDB	bramble, clematis, blackthorn etc.
1715	*Idaea straminata*	Plain Wave		1	local	dandelion, knotgrass, sallow
1716	*Rhodometra sacraria*	Vestal		>20	immigrant	knotgrass etc.
1717	*Lythria purpuraria*	Purple-barred Yellow		2	widespread in France	doubtfully British, no C20th records

	Scientific Name	English Name	French Name	Nos	Status (in Britain)	Larval Foodplants / other comments
1728	*Xanthorhoe fluctuata*	Garden Carpet	la phalène ondée	1	common	crucifers
1738	*Epirrhoe alternata*	Common Carpet	l'alternée	1	common	bedstraw
1742	*Camptogramma bilineata*	Yellow Shell	la brocatelle d'or	1	common	bedstraw, dandelion, dock etc.
1770	*Thera vetustata*	(French sp. - false number)		1		
1825	*Eupithecia centaureata*	Lime-speck Pug		2	common	flowers of low-growing plants
1862	*Gymnoscelis rufifasciata*	Double-striped Pug		1	common	flowers of low-growing plants
1875	*Asthena albulata*	Small White Wave		3	common	hazel, birch, rose
1888	*Stegania trimaculata*	Dorset Cream Wave(1888a)		2	rare immigrant	poplar
1894	*Chiasmia clathrata*	Latticed Heath	la géomètre à barreaux	1	common	clovers, trefoils
1906	*Opisthograptis luteolata*	Brimstone Moth	la citronelle rouillée	4	common	blackthorn, hawthorn etc.
1921	*Crocallis elinguaria*	Scalloped Oak	la phalène de la mancienne	2	common	blackthorn, hawthorn, birch, oak etc.
1936	*Menophra abruptaria*	Waved Umber	la boarmie pétrifiée	1	common in south	privet, ash, birch
1937	*Peribatodes rhomboidaria*	Willow Beauty	la boarmie rhomboidale	>10	common	many deciduous trees
1937b	*Peribatodes ilicaria*	Lydd Beauty		1	rare immigrant	many deciduous trees
1945	*Cleorodes lichenaria*	Brussels Lace	la boarmie des lichens	1	local in west	lichens on stems & rocks
1947	*Ectropis crepuscularia*	Engrailed	la boarmie crépusculaire	0	common	many deciduous trees
1968	*Aspitates ochrearia*	Yellow Belle	l'aspilate ochracée	>20	local in south	low plants, inc clover & trefoil
	Family	Sphingidae				
1972	*Agrius convolvuli*	Convolvulus Hawkmoth	le sphinx du liseron	1	immigrant	bindweed
	Family	Notodontidae				
2004	*Harpyia milhauseri*	Tawny Prominent	le dragon	1	rare immigrant	oak
	Family	Lymantriidae				
2026	*Vapourer*	Orgyia antiqua	l'étoilée		common	many deciduous trees, day flying
	Family	Arctiidae				
2037	*Miltochrista miniata*	Rosy Footman	la rosette	>10	local in south	lichens on stems
2040	*Pelosia muscerda*	Dotted Footman	la lithosie muscerde	3	RDB	lichens on stems

	Scientific Name	English Name	French Name	Nos	Status (in Britain)	Larval Foodplants / other comments
2045	*Eilema caniola*	Hoary Footman	le manteau pâle	>20	Nb (in south-west)	lichens on rocks
2050	*Eilema lurideola*	Common Footman	la lithosie complanule	1	common	lichens on stems & rocks
2056	*Cymbalophora pudica*	(French sp. - false number)	l'écaille tesselée	>20	Mediterranean	various low plants & grasses
	Family	Noctuidae				
2087	*Agrotis segetum*	Turnip Moth	la moissonneuse	3	common	roots & lower shoots of herbs
2091	*Agrotis ipsilon*	Dark Sword Grass	la noctuelle baignée	2	immigrant	roots & lower shoots of herbs
2097a	*Actinotia hyperici*	Pale-shouldered Cloud		2	rare immigrant	st john's-wort
2107	*Noctua pronuba*	Large Yellow Underwing	le hibou	>10	common	many herbaceous plants
2109	*Noctua comes*	Lesser Yellow Underwing	la suivante	5	common	many herbaceous plants
2110	*Noctua fimbriata*	Broad-bordered YU	la frangée	1	common	many herbaceous plants
2111	*Noctua janthe*	Lesser Broad-bordered YU		6	common	many herbaceous plants
2112	*Noctua interjecta*	Least Yellow Underwing		2	common in south	many herbaceous plants
2117	*Eugnorisma glareosa*	Autumnal Rustic		1	common	low plants, birch, sallow
2120	*Diarsia mendica*	Ingrailed Clay		1	common	many trees, shrubs & herbs
2126	*Xestia c-nigrum*	Setaceous Hebrew Character	le C noir	7	common	many herbaceous plants
2134	*Xestia xanthographa*	Square-spot Rustic		1	common	mainly grasses
2145	*Dicestra trifolii*	Nutmeg	la noctuelle du trèfle	2	common	various herbaceous plants
2147	*Hada nana*	Shears		2	common	various herbaceous plants
2160	*Lacanobia oleracea*	Bright-line Brown-eye	la potagère	1	common	various herbaceous plants
2177	*Tholera cespitis*	Hedge Rustic		1	common	grasses
2193	*Mythimna ferrago*	Clay		2	common	grasses
2194	*Mythimna albipuncta*	White-point		5	immigrant: recent colonist	
2198	*Mythimna impura*	Smoky Wainscot		2	common	grasses
2202	*Mythimna l-album*	L-album Wainscot		1	Nb immigrant in south	grasses, esp marram
2224	*Calophasia platyptera*	Antirrhinum brocade		2	suspected rare immigrant (one C19th specimen only)	
2261	*Conistra erythrocephala*	Red-headed Chestnut	l'hyacinthe	1	rare immigrant, transitory resident	
2265	*Agrochola helvola*	Flounced Chestnut	la dorée	1	common	many deciduous trees
2289	*Acronicta rumicis*	Knot Grass		1	common	herbaceous & woody plants
2297	*Amphipyra pyramidea*	Copper Underwing	la pyramide	1	common in south	many deciduous trees

	Scientific Name	English Name	French Name	Nos	Status (in Britain)	Larval Foodplants / other comments
2298	*Amphipyra berbera*	Svensson's Copper Underwing	la pyramide berbere	2	common in south	many deciduous trees
2303	*Thalpophila matura*	Straw Underwing	la cythérée	>20	common in south	grasses
2343	*Mesapamea secalis/didyma*	Common Rustic species	l'hiéroglyphe	1	common	grasses
2353	*Luperina testacea*	Flounced Rustic	l'avare	8	common	roots & lower shoots of grasses
2355	*Luperina dumerilii*	Dumeril's Rustic		2	immigrant	roots & lower shoots of grasses
2380	*Sesamia* sp.	(French sp. - false number)	(S. nonagrioides/cretica)	5		
2384	*Hoplodrina ambigua*	Vine's Rustic		5	common in south	many herbaceous plants
2385	*Spodoptera exigua*	Small Mottled Willow		>20	immigrant	many herbaceous plants
2389	*Caradrina clavipalpis*	Pale Mottled Willow	la noctuelle des jachères	5	immigrant, common	seeds of grass, plantain & peas
2400	*Helicoverpa armigera*	Scarce Bordered Straw	l'armigère	10	immigrant	geranium, yellow-rattle etc. etc.
2403	*Heliothis peltigera*	Bordered Straw	la peltigère	2	immigrant	restharrow, groundsel, marigolds
2407	*Eublemma purpurina*	(French sp. - false number)		2	common in France	thistles
2414	*Emmelia trabealis*	Spotted Sulphur	l'arlequinette jaune	1	presumed extinct	field bindweed
2421	*Bena prasinana*	Scarce Silver Lines	la halias du chêne	1	local in south	oak, perhaps birch
2423	*Nycteola reveyana*	Oak Nycteoline	la noctuelle de revay	1	local	oak
2428	*Chrysodeixis chalcites*	Golden Twin-spot		1	immigrant, import	sage, viper's-bugloss, chrysanths
2441	*Autographa gamma*	Silver Y	le lambda	2	immigrant	many herbaceous plants
2453	*Catocala elocata* (2453a)	French Red Underwing	la déplacée	1	rare immigrant - Jersey	
2460	*Dysgonia algira*	Passenger		1	immigrant	many herbaceous plants & trees
2463	*Aedia leucomelas*	(French sp. - false number)		>20	mediterranean	
2465	*Tyta luctuosa*	Four-spotted	la funèbre	1	Na suspect immigrant	field bindweed
2477	*Hypena proboscidalis*	Snout	la noctuelle à museau	1	common	nettle
2489	*Zanclognatha tarsipennalis*	Fan-foot		1	common	withered leaves of oak, beech etc.

It was noticeable how few genuinely autumnal species were recorded, and how few micros were about; in the end I built up a fair list of pyralids; but tortricids were distinctly scarce and smaller things almost non-existent. Perhaps they were just hard to spot amongst the sometimes overwhelming numbers of larger species!

Likewise, only one hawk moth was seen during the whole stay, this being a Convolvulus Hawk found at rest, close to the static trap on the final morning of operation. It was a fitting end to the week, and a spectacular moth for the other visitors to see, but we wondered where all the other hawks were – there was no shortage of Humming-bird Hawks the following week at our son's house near Grenoble!

I have recorded moths in France on quite a number of visits over about the last 12 years, and although this was actually the furthest south-west I have ventured, it confirmed my impression that most of the species encountered are actually on the British list, though some have only very occasionally or doubtfully been recorded here. On this visit, only six of the 119 species recorded could not be located in the usual British identification guides, and these 'French' species have been allocated false numbers in the accompanying list to allow them to be placed accurately alongside their British relatives.

Also in the list, I have shown the French vernacular names given in Leraut, the status of species in Britain and some comments on habitats and food-plants, which were readily available in the literature. The 'Nos' column gives an indication of the maximum numbers seen on any one occasion during the week, with five being generally an approximate number and >10 and >20 being used when accurate counting was judged to be unnecessary.

Conclusion

Jenny had already been visited by some 'butterfly people' who had recorded moths during Summer 2002. Their results, combined with mine, will surely give a total moth list of well over 200 species, which might be of interest in a future bulletin. There is huge scope, though, for the recording of other orders, and for work to be done on botany/food-plants and habitat management. Any specialists wondering where to spend a week's holiday should consider making contact with Jenny.

Acknowledgements

My thanks to Jenny Boncey for making us so welcome and to Harry Beaumont, YNU micro recorder, for confirming and determining the

identification of the small number of specimens which had to be retained.

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Some Butterflies on the Balearic Islands in June

by David Newman (8968)

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I am a decidedly amateur amateur entomologist! All wildlife fascinates me but my special joy is butterflies. Although I do survey some sites on a more-a-less regular basis and do try to stick to a fixed survey route, I cannot put my hand on my heart and say that I have ever walked a transect, except by accident. I get great enjoyment from observing and recording the wildlife in my own garden but otherwise I am a bit of an opportunist. My greatest pleasure is to stumble upon butterflies where other people might not deign to look.

Our annual family holiday, which now includes my little grandson and his parents, generally consists of a week in self-catering accommodation somewhere sunny. The aim is to enjoy as much of the outdoors as possible and to “eat out” at every available opportunity. The Balearic Islands of Ibiza and Menorca seemed to offer just what we look for – a short flight and easy access by hire car to a variety of seaside locations. Both islands can be traversed from end to end in a couple of hours.

On holiday we typically head off to a suitable looking beach and, having settled the family down to the serious business of making sand castles, swimming etc., “grandpa” forays forth into the adjacent environs to meet the local butterfly residents. This means that most sites I investigate are coastal. Occasionally the whole family will join me on an inland butterfly safari, much to my delight.

In 2002 we chose to visit Ibiza in mid-June and in 2003 our holidays took us to Menorca in early June. On Ibiza we stayed at Cala Longa on the south coast close to the interesting town of Santa Eularia. We generally avoided the western end of the island as that is the "club capital" of Europe (enough said!). On Menorca we stayed in the south-east corner at Es Castell close to the island's capital of Mahon. Sadly the accommodation in Menorca at the "Sunrise Village" was poor – dirty, in bad repair, unsafe and completely unlike the holiday brochure. Unfortunately "My Travel" belittled my complaints – apparently it was only what was to be expected. So that was the first and last time my travel will be with "My Travel"! On Menorca we also saw little of the western end of the island despite the excellent road that runs along the spine of the island which makes most areas very accessible. We did travel west to the old capital of Ciudalela, which was well worth a site-seeing visit. The much vaunted beach of Cala'n Turqueta, however, proved very disappointing – small, crowded and with unmentionable items floating in the sea and, worse of all, no butterflies! "Our" end of the island was much more interesting.

It goes without saying that as Ibiza and Menorca are both small islands I did not expect to see quite the same variety of species as on the Mediterranean mainland. "Absent from the Mediterranean Islands" and "Absent from the Balearic Islands" are all to common refrains in Higgins and Hargreaves (1985). Yet there is something appealing about finding species when there are not many to look for!

What I found fascinating was how very different the two islands are. Ibiza does have pine trees but the overall impression is of a typically arid Mediterranean climate – scrub rather than trees, dry soil and few wildflowers (at least in mid-June). Menorca, on the other hand, is much greener – well wooded with a much more temperate feeling about it and far more wild flowers in evidence. It also has fields of English-looking cows! These are a legacy of our occupation of the island in the 18th Century, as is the military road (actually a track) which runs round much of the coast. Menorca is, in fact, more prone to rain, which was forecast for our week. As it turned out a little light rain on the first day was all we saw. Both our holiday weeks were essentially "wall-to-wall sunshine".

On Ibiza I recorded butterflies at seven different locations, a couple of which were visited twice. On Menorca I observed butterflies at twelve different sites. Ibiza yielded twelve different species while Menorca yielded sixteen. The results are summarised in Tables 1 and 2 and the location of the sites visited indicated by the maps in Figures 1 and 2.

Table 1. Ibiza June 15th-21st, 2002.

	15/6	16/6	17/6	17/6	18/6	19/6	19/6	20/6	21/6
Site:	b	d	b	g	e	c	a	f	d
Bath White		*				*			
Brown Argus		*							*
Clouded Yellow					*				
Common Blue	*	*		*	*				*
Geranium Bronze	*			*				*	*
Painted Lady		*		*		*		*	*
Small Copper		*							
Small White					*	*		*	*
Speckled Wood	*	*	*	*				*	
Two-tailed Pasha							*		
Wall Brown		*	*	*	*	*		*	*
Wood White									*
Number of Species:	3	7	2	5	4	4	1	5	7

a = Atalayassa b = Cala Longa c = Cala Moli d = Cala San Vincente e = Platja d'Es Figueral f = Port de Miguel g = Punta de Xarraca

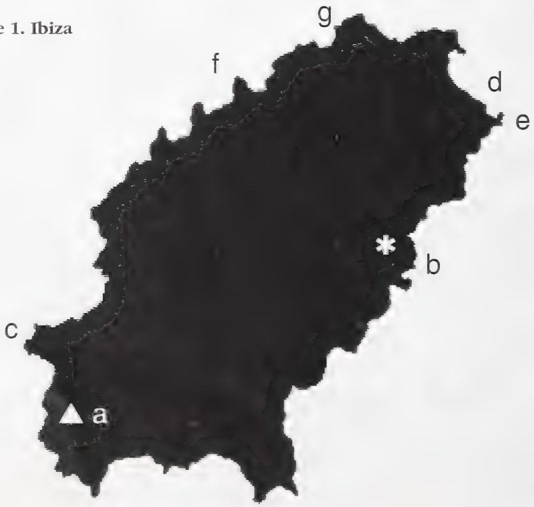


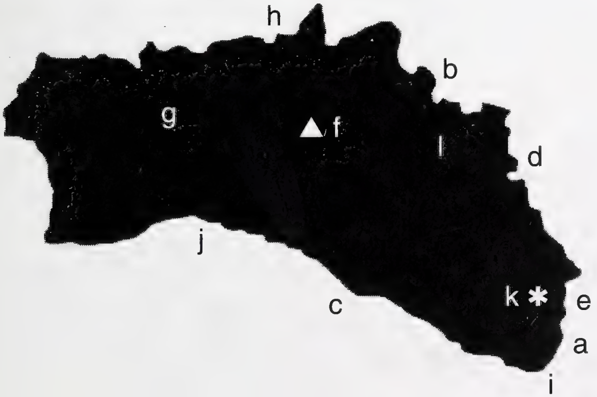
Figure 1. Ibiza

Table 2. Menorca June 5th-12th, 2003.

	5/6	5/6	6/6	7/6	7/6	8/6	8/6	9/6	9/6	10/6	10/6	12/6
Site:	i	k	b	g	j	d	a	f	e	h	l	c
Cleopatra	*			*	*	*	*	*	*	*	*	*
Clouded Yellow	*	*	*		*	*	*		*	*	*	*
Common Blue	*	*	*		*	*			*	*	*	*
Large White	*											*
Long-tailed Blue	*		*	*		*						*
Meadow Brown		*							*	*	*	
Painted Lady	*	*	*	*		*	*		*	*	*	*
Red Admiral			*	*	*	*					*	
Small Copper			*									
Small Heath					*							
Small White		*			*				*	*	*	*
Southern Gatekeeper						*			*			
Speckled Wood		*	*		*	*	*	*	*		*	
Swallowtail			*					*		*	*	*
Two-tailed Pasha					*							
Wall Brown	*	*							*	*	*	
Number of Species:	7	7	8	4	8	8	4	3	9	8	10	8

a = Alcaufar b = Arenal d'en Castell c = Cala en Porter d = Cala Mesquida e = Cala Sant Esteve f = El Torro g = Ferreries h = Platja de Binimal-la i = Punta Prima j = Sant Tomas k = Sol del Este, Es Castell l = Wood near Binimatzoc

Figure 2. Menorca



On Ibiza the most common and widely spread species observed were the "orange" race of Speckled Wood (*Pararge aegeria aegeria*) and the Wall Brown (*Lasiommata megera*). One or both of these species were observed at almost every site I visited.

The week on Ibiza had a most auspicious start. We were eating our first evening meal in a pavement café in Cala Longa when I noticed a small dark brown butterfly flitting around the geraniums in the flower border by our table. Closer examination revealed it to be a Geranium Bronze (*Cacyreus marshalli*). This species, accidentally introduced with *Pelargoniums* from South Africa, was first observed on Mallorca in 1989. According to Chinery (1998) it "has now spread to the other Balearic Islands" although I failed to find it on Menorca. This was the only "new" species for me on Ibiza. I found it at four out of the seven sites visited. At three sites it was seen around flower borders in the resorts but at Cala San Vincente I observed an individual on a farm track around wild flowers. Migdoll (1987) states that this butterfly "usually flies alone" which agrees with my observations!

The best site I visited on Ibiza was at the resort of Cala San Vincente on the east coast. A footpath takes you inland from the western end of the beach to a farm track which eventually comes out on the main road into the resort. Two visits to this location yielded ten species of which four were not seen anywhere else.

My most exhilarating observation was of a single Two-tailed Pasha (*Charaxes jasius*) skimming over the treetops on Atalayassa (475m), the highest point on the island. Having negotiated the rather obscure and hair-raising track up the "mountain", we were rewarded by scenic views across the island. The bonus was to see such a beautiful butterfly drifting back and forwards effortlessly in the blue sky above the pine trees. I gather that most people have to settle for observing this species from a distance like this. I was obviously greatly blessed with my first encounter. This was at Lac de S. Cassien, nr. Grasse in the South of France in May 2000. Eating lunch in the restaurant on the shore of the lake, we were entertained by an individual which flew around our heads, settling over again in a wine glass to take a refreshing sup before skimming away again. Later on, in the restaurant car park, we were able to examine another individual at leisure as it probed a dog dropping for minerals.

I enjoyed the butterflies I did see on Ibiza but in terms of variety of species and abundance of individuals my experience was that the island is not the greatest place for viewing these "jewels of creation". The situation on Menorca was very different!

We arrived on Menorca at noon which gave us a good half day to get settled in and to get our bearings. Even though we drove to the apartments in light rain it was immediately apparent that there were plenty of butterflies around. In mid-afternoon we took our first trip out, to the resort of Punta Prima. The rain was easing off and the sun was already drying everything up. As we drove along clouds of Painted Lady Butterflies (*Cynthia cardui*) and Silver-Y Moths (*Autographa gamma*) rose from the abundant hedgerows. If like me, the Painted Lady is one of your favourite butterflies then Menorca is the place for you. I am sure I saw significantly more specimens in one week on Menorca than all those I had ever seen in Britain! Just as in Britain they came in all sizes. Why is it that certain species – Painted Lady, Comma (*Polygonia c-album*), Speckled Wood in my experience – seem to be particularly susceptible to size variation? In all these cases I regularly observe specimens in the same season and environment with wingspans that vary by a factor of up to two.

It quickly became apparent that a number of species on Menorca are widespread and abundant. Apart from the Painted Lady this applied particularly to the Cleopatra (*Gonepteryx cleopatra*), Clouded Yellow (*Colias crocea*) and Common Blue (*Polyommatus icarus*). So much so that two and a half year old Isaac rapidly developed the correct response “Oh look there is another Painted . . . Yady = Lady”, “Clouded . . . Yellow”, “Common . . . Blue” and “Cleo . . . patra”! Next year, God willing, I am going to start on the scientific names with him!

The site I surveyed at Punta Prima was typical of the “resort sites” I visited on the Island – an area of scrubby wasteland adjacent to the beach. The highlight of that first foray, apart from the fact that the whole family joined me, was a couple of fresh specimens of the Long-tailed Blue (*Lampides boeticus*). This beautiful butterfly is reputably common throughout southern and central Europe but I have to confess that my sightings have been few and far between and hence most delightful.

The sixteen thousand dollar question on Menorca became “will I bag a new species”. I was having a whale of a time, “knee-deep” in butterflies, but the cream on the cake would be to see something new. Well, I did have to be patient, but eventually I was rewarded. On our fourth day we took a trip to the undeveloped coast to the north of the capital Mahon and found the beautiful beach of Cala Mesquida. It was a real scorcher (it just got hotter and hotter as the week progressed) but I could not resist a walk along the old military road northwards from the beach. Almost immediately I spotted a number of very flighty little butterflies around the profusion of brambles. After a long stalk I was eventually able to identify the Southern Gatekeeper (*Pyronia cecilia*), my new species! I was surprised just how difficult it was to approach this butterfly compared with our own, closely related Gatekeeper (*Pyronia tithonus*). The other "out-of-the-way" beach which proved well worth a visit was Platja de Binimal-la up on the North coast (unlike Cala Mesquita this one actually has a restaurant). The walk eastwards from the beach proved a most satisfying butterfly site.

The other moment of delight for me on Menorca was when we were sitting in the beach-side restaurant at Sant Tomas and a Two-tailed Pasha sailed majestically over our heads. The great thing about our week on the island was that this was just one of a whole series of wonderful experiences.

If you are a serious wildlife explorer then I doubt if Ibiza would be of much interest to you, but you might think twice about a short late-Spring visit to Menorca – you might even see one of the wild tortoises which eluded us. If, on the other hand, you are an ingrained amateur like me and you wish to combine a family holiday with some easy butterflying, then I would strongly recommend Menorca and even Ibiza as potential holiday destinations in June. You might even see all those wonderful species which I missed because I happened to be looking the wrong way admiring the beautiful Mediterranean views.

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Higgins, L. and Hargreaves, B., (1985), *The Butterflies of Britain and Europe*. Collins, London.

Migdoll, I and Struik, C., (1987), *Field Guide to the Butterflies of Southern Africa*. Cape Town.

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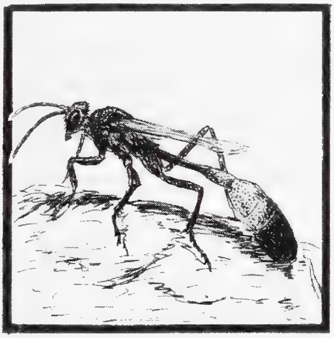


ANNOUNCEMENTS, REQUESTS AND REPLIES

Harley Books

The Society has been notified by Basil and Annette Harley, well known to many members as the proprietors of Harley Books and publishers of some of the best insect books available, that they are planning their retirement. Members may be unaware that both are well beyond normal retirement age; Basil is in his 75th year.

They have decided to cease publishing any new titles after next spring when they will have completed all the titles in hand, except for the *Moths and Butterflies* series which they realise cannot be finished without outside support. Having failed to find other suitable publishers willing to take it over in view of its cost of production, they are seeking to establish a charitable trust which would enable it, with a strengthened board of editors under John Langmaid, to go forward to completion as well as to fund other publications on Lepidoptera. Further details will be released later. The Harleys are anxious not to leave the series without a future and will continue to sell the other titles in the Harley Books' list, as previously.

Harley Books and Philip Sterling, one of the newly appointed associate editors, would be happy to hear from anyone who wishes to offer help (financial or otherwise) with this project.

The AES AGM and Members' Day

As attendance was so poor at this year's event despite an excellent programme, we are mentioning the 2005 event early so everyone can put it in their diaries. Believe me, you won't regret attending! The day is scheduled for the last Saturday in April (ie 23rd April 2005) at the Royal Entomological Society 41 Queen's Gate, London.

The Hammond Award

We are pleased to announce that the AES Council has sanctioned an increase in value for the Hammond Award. This is the award for the best article in the *Bulletin* for the year. The award is now worth £100. This is in cash, not vouchers, so it is clearly worth thinking about writing for the *Bulletin*. Winners over the last two years were Ian Wallace for 'A Beginners' Guide to Caddis' and Sarah Patton for 'Classic Entomological Sites – Pagham Harbour, West Sussex'.

The award was originally introduced in March 1982, for the best contribution to the *Bulletin* on the theme of British insects. In 1984, it was agreed that the recipient should be a member of the Society. The articles are nominated by the editors and voted for by Council.

The Cribb Award

Whilst on the topic of awards, it is pertinent to mention the Cribb Award. This award was created to commemorate the life of Peter Cribb (1920-1993). It is offered annually for achievements in any aspect of invertebrate conservation.

The award is open to all individuals permanently resident in the United Kingdom, except for current members of the AES Council. Each candidate should be nominated by at least two individuals (except members of their immediate family). The nominations should have five copies of an account of the nominee's achievements in no more than 500 words. The nominations can be sent to the AES via the PO Box or emailed to phil@bombus.freeserve.co.uk.

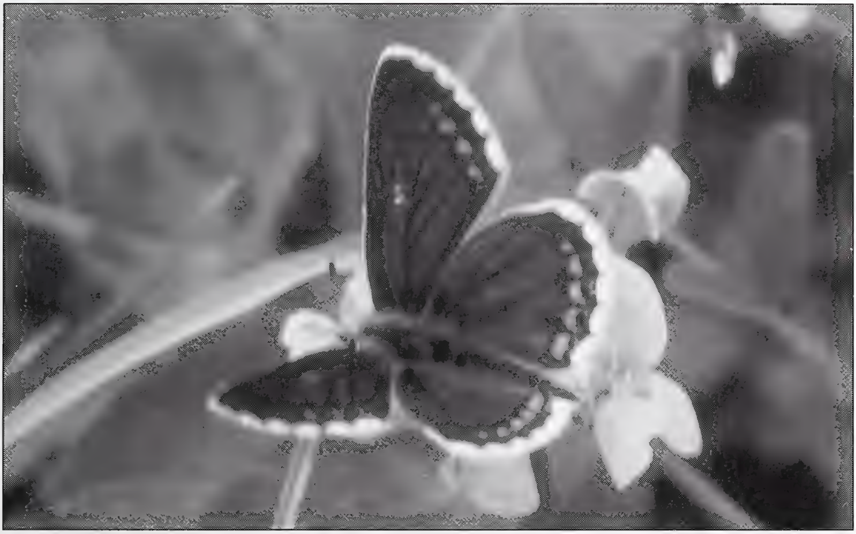
The Ants of Poland

The AES has been sent details of the book *The Ants (Hymenoptera, Formicidae)* of Poland by Wojciech Czechowski, Alexander Radchenko and Wieslawa Czechowski. The book is a monographic study of 98 species known from Poland. It is in three sections, cataloguing the species, describing the myrmecofauna and providing keys to their identification. The book has 200 pages, 101 figures and 20 plates of morphological drawings.

It is available through the Library of the Museum and Institute of Zoology, PAS, Wilcza 64, 00-679 Warszawa, Poland; email: libr@miiz.waw.pl. The price is US$ 25, plus postage. It may be available via specialist dealers (ISBN 83-85192-98).

Mystery Picture

We have been sent this photo of a butterfly to test members' identification skills. The photo was taken by Will McCall (10359) of Woking, Surrey. Originally, it was meant as a test without further clues, but we can say that it was photographed on Denbies Hillside near Ranmore Common, Dorking, Surrey amongst Brown Arguses and Adonis Blues on 23rd May 2004. The butterfly is predominantly brown with reddish spots. The answer (as per the Natural History Museum) is later in this section. However, if others wish to send in similar photos we could make this a regular feature and defer the answer to the subsequent issue of the *Bulletin*!



Snowberry as a larval foodplant for the White Admiral *Ladoga camilla*.

Peter May (10514)

6 Aigburth Avenue, Aldwick, Bognor Regis West Sussex, PO21 3DA.

The article "Alternative larval foodplant for the White Admiral" by Dr Alan Butler in the August *Bulletin* prompted me to check my copy of the most recent AES publication entitled *Larval Foodplants of the Butterflies of Great Britain and Ireland* (P. May, October 2003). I wanted to see if I had listed Snowberry as a foodplant of the White Admiral *Ladoga camilla* or not. It is often stated that only Honeysuckle *Lonicera periclymenum* is used, although Fly Honeysuckle *L. xylosteum* and Garden Honeysuckle *L. caprifolium* are also utilised.

I found that Snowberry *Symphoricarpus* spp. was listed. This led me to look at my notes taken during research to discover where this foodplant had been previously mentioned. It seems that it was listed by P. B. M. Allan in his *Larval Foodplants* (1979 2nd Edition). Allan quite clearly states that his publication was based upon published records so he was obviously relying upon an older authority when giving Snowberry as a foodplant for *Ladoga camilla*. A number of other sources have come to my attention since my publication was printed, and two of these, *Photographic Guide to the Butterflies of Britain and Europe* (Tolman 2001) and the Collins Field Guide *Butterflies of Britain and Europe* (Tolman 1997) list *Symphoricarpus racemosa* as a foodplant for *Ladoga camilla*.

Allan's inclusion of *Symphoricarpus* as a foodplant in his book indicates that there is an older reference to it in entomological literature. To date, I have not been able to locate this reference.

EDITOR'S NOTE: Peter May's excellent publication was extensively researched and well worth purchasing – see the AES Publications advertisement within the *Bulletin*.

Update on Chamomile Sharks in the Glasgow area

Frank McCann (6291) has contacted the Society regarding his interests in the Chamomile Sharks (*Cucullia chamomillae*) in the Glasgow area (see AES *Bulletin* Volume 63, Number 452, February 2004, page 13). Unfortunately, the chamomile plants of the Royston area have mainly disappeared, due to Land Services grass cutting activities. In contrast, chamomile is flourishing in the Queenslie area 2-3 miles east of Royston.

Frank has taken action to help the Chamomile Sharks of Royston in two ways. He contacted Land Services to discuss the mowing regimes. He has subsequently met up with the Conservation Officer who has suggested a programme of Chamomile seed sowing in Royston. Frank also observed ten to twelve Chamomile Shark caterpillars in Queenslie and introduced two to Royston to some remaining foodplants. The following day he observed partly eaten flower heads and the caterpillar resting on the underside of a Chamomile flower. It was curled round in a semi-circle below the petals. Frank wonders if this is to protect the caterpillar against rain, which was frequent in July.

Mystery Picture – the answer

The confusing feature is the presence of white spots on the fore-wings. The Natural History Museum feel that this is not a Northern Brown Argus *Aricia artaxerxes* that was a bit lost, but a Brown Argus *Aricia agestis* ab. *alboannulata*.

Book Reviews

Hazards of Butterfly Collecting

Torben B. Larsen. A compilation of previously published accounts, with 147 illustrations and photographs. 256 pages. Softcover. ISBN 0-9548375-0-9. Price: £11.99 UK, £13.99 Overseas, including postage. Available from Cravitz Printing Co Ltd, 1 Tower Hill, Brentwood, Essex CM14 4TA. Tel: 01277 224610. Fax: 01277 262815. An Order Form (PDF format) is available by e-mail from: cravitzprinting@btconnect.com

Car crashes, police chases, Kalashnikov rifles, snow-blindness, malaria, brushes with leeches and driver ants. These are just some of the experiences described here by that intrepid, modern-day naturalist/adventurer, Torben Larsen, on travels through five continents. This is not a reference book in the accepted sense, though there is science to be found in most of the 100 immensely readable stories; but it *is* an extraordinary account of a dedicated individual's encounters with the environment and, not least, his experiences with the local human inhabitants who occasionally contrive to make his pursuit of science less than straightforward. This is almost a behind-the-scenes look at an extraordinary lifestyle, revealing hardships, triumphs and unexpected rewards. Throughout, the stories are related with humour always close to the surface – though the less adventurous reader is nonetheless left with the unsettling feeling that the author displays a zeal for his research more akin to the exploits of early explorers than can be met with nowadays at the local nature reserve!

There will be those (indeed, there *have* been those) who will criticize Torben Larsen's uninhibited approach to butterfly collecting but his contributions to science will outlive any such negative views. With many species or subspecies of butterfly bearing his name, and about 100 described by him, ample justification is surely provided for his insatiable appetite in the collection of specimens. Nor are his interests confined to butterflies. A sentence, casually inserted in 'Hazards of butterfly collecting – Dhofar, 1981', modestly reads, "Mr. E. P. Wiltshire tells me that there are at least twenty species of larger moths new to science in the material, and there are also several new ant-lions, beetles, and an Ascalaphid (this latter being *Tmesibasis larseni* with no relatives closer than the Kalahari, though it is probably also in the Somali Subregion)." Uninformed critics, take note.

The book neatly divides into nine chapters, each loosely themed, some more hazardous in nature than others. Many of the accounts are modified versions of those previously published in *The Entomologist's Record and Journal of Variation* over a 25-year period, so will be familiar to some readers. The story begins in Greece, in 1950 when the author was just six years old, and ends ….. well with a character such as Torben Larsen, who can say where or when it will all end?

Throughout the book we are treated to glimpses of family life in many, diverse countries. When not on dedicated expeditions, we note that, at every opportunity when on business trips, time is found to unpack the butterfly net that is as much part of the author's luggage as is his pipe and toothbrush. On each page the sheer joy of his encounters with butterflies is conveyed with an enthusiasm that is never inhibited by the threat of a bullet, the obstinacy of a bureaucrat or the death-wish of a driver. So casually are some of the hazards related, and so frequently does Torben get into (and out of) scrapes, that dangers such as these appear as much part of the entomologist's routine day as the wielding of a net. In truth, if many of us were to encounter just one such experience it would be re-told on many, many an occasion! For the author it is simply accepted as part of another day's work.

Torben Larsen's quest for science and zest for life springs from every page and this book is thoroughly recommended both to those who recognize the enormous contribution made by the author in the field of entomology, and those who wish no more than an entertaining read.

Eddie John (7937)

A Natural History of Nettles

Keith G. R. Wheeler. 300 pp plus CD Rom with colour plates, 2004, £15.99 (excluding postage). Trafford Publishing, Suite 6E, 2333 Government Street, Victoria, B.C., V8T 4P4, Canada. ISBN 1-4120-2694-6

As it says, this book is about nettles. In other words, it is not restricted to the entomology of nettles. However, there is plenty within the book to merit its place on an entomologist's bookshelf. Two chapters and many illustrations are dedicated to the insects associated with nettles. In addition, there are chapters on folklore, medicinal uses, stinging and its effects, uses of nettles, parasites, related plants, and more. In short, there is anything you could really want to know about the plant.

Keith was unable to persuade a conventional publisher to take on the risk of a book about nettles, so he has opted for 'publication on demand' via the Canadian firm Trafford Publishing. This seems to mean that the book is printed in small numbers regularly to meet demand. The advantage is that the errors that I noticed in the review copy will probably be corrected by the time AES members purchase the book!

To save on costs, the plates are printed in black and white in the book. A CD Rom is included which has all of them in colour. The colour plates (when printed out at high resolution) are stunning. It is a pity that Keith could not persuade a publisher to take on the book in colour, as it would have included some beautiful plates (particularly of butterflies and moths).

This book shows Keith's passion for nettles and is thoroughly researched, though written in a very easy-going style. For fascinating background information on a plant that is probably taking over the world, you need look no further than this book. Once you have it, revel in the superb illustrations of insects that are included!

Phil Wilkins

The Moths of Essex

Brian Goodey. 362 pp, 2004, £19.75. Lopinga Books, Tye Green House, Wimbish, Essex, CB10 2XE. ISBN 0-9530362-5-1. Available online from www.lopinga.com.

There are many county moth books, so how do you produce something unusual? This book tries to give as much information as possible about each species in as compact a space as possible in a highly original way.

There are several chapters on matters relevant to moths in Essex. These include an appreciation of Arthur Maitland Emmet, A detailed account of Fisher's Estuarine Moth and some comparisons of population trends and long term monitoring in gardens and via a Rothampstead trap at Writtle College. However, the bulk of the book consists of the species accounts.

All of the 1,790 species of Essex moths are covered in about 280 pages. The distribution maps ingeniously show how records have changed through time and are very clear and easy to understand. Rare moths have accounts of distribution and records. Otherwise you do need to read the chapter introducing the species accounts fully to follow the information presented. There is also an interesting section on species excluded from the Essex list.

There are a few small errors. For example, I noticed that at least five sets of photos are transposed (eg Angle Shades and Olive on p308). When I contacted the publishers, they are aware of these and various typos and they will be issuing an errata slip with future books and hope to have all errors on the website (www.lopinga.com).

Despite these minor problems, I would fully recommend the book for the sheer amount of information crammed into a relatively small space. Anyone interested in the changes in distribution of moths (notably micros and migrants) in southeast England should seriously consider purchasing the book.

Phil Wilkins

The Grand Surprise – Butterflies and the Kingdom of God

by John Woolmer. Published by Word for Life Trust 2004, 128 pages, hardback £12.99. ISBN 1-903577-49-7. Can be obtained from the author (price includes postage) at Fig Tree Cottage, Hallgates, Cropston, Leicester, LE7 7GQ or from the publishers or bookshops.

When I initially offered to undertake of review of this book I was unsure as to what the theme of the book might be. I wondered as to whether the book might try to explain why the author felt that the existence of butterflies was proof of the existence of God, creation as opposed to evolution or perhaps why God had created butterflies. As it transpired, it was none of these.

The first chapter, entitled " Through the Year with a Swallowtail" details the life history of The Swallowtail, and includes a series of photographs of each stage of the insect. The religious aspect of this chapter compares how the emergence of an adult butterfly can be similar to the 'emergence' of a Christian following conversion, in that the life undertaken before this event is quite unlike the life leading up to it. Chapter 2 deals with the life of an adult butterfly from emergence, to feeding, basking, and hibernating and refers to the various hazards the insects are faced with, most being predators. This chapter then turns to the needs of the newly converted Christian having a need for spiritual food such as prayer, meditation, reflection, fasting and periods of withdrawal.

Migration and Mimicry is the title of the next chapter, and refers mostly to the migration of the Painted Lady, Clouded Yellow, Red Admiral, and Monarch butterflies, as well as aspects of mimicry. We are then asked to consider how Christians are called to be missionaries in other parts of the world and the effects this can have.

Each subsequent chapter continues the theme of having an entomological aspect, which is then used to illustrate an aspect of human life, including, as far as entomological matters as concerned, courtship in butterflies, how the author found his first adult hairstreaks, woodland butterflies near Verdun in France, the Camberwell Beauty, conservation programmes in Papua New Guinea and Africa, as well as conservation in Europe, the association between some species of butterflies and ants, and the predators and parasites of various species of butterflies. These chapters are used to illustrate parts of human life such as courtship, commitment and marriage in our modern lives, sin, turning to God for help with coming to terms with past problems, forgiveness, bereavement and grieving, the decline of the church in some areas, the parable of the Good Samaritan, the fight against evil and the resurrection of Christ.

The entomological parts of this publication have therefore been used to both illustrate parts of Christianity, or to persuade us to spend some time considering aspects of our modern lives. It is clearly not intended to be an in depth scientific book on butterflies, but the entomology content is in general well written and correct, although I found the lack of Latin names surprising and felt that some terms used suffered from inconsistency, such as caterpillar and larvae appearing in the same paragraph. However, I feel there can be no criticism of the photographs of the butterflies and their immature stages, and these alone should justify the purchase of this publication. The life sequence sets of the Swallowtail, Two-Tailed Pasha and Purple Emperor are a pleasure to see. Peter May (10514)

* * *

Errata

Dr Peter G. Sutton (7388)

AES Habitat Conservation Officer, 2 Fir Tree Close, Flitwick, Beds. MK45 1NZ.

When a certain gentleman put forward the statement: "To err is human...", I wonder if he was taking into account the sort of error that appeared in *Bulletin* number 455? Here, in all their glory, are the more obvious errors that have crept into the *Bulletin* in recent issues.

Category status: Howler

Vol. 63, # 455, (Arnside Knott...) p. 159 and Plate 6: pictures show brown form of the Common Blue *Polyommatus icarus*, not the Northern Brown Argus *Aricia artexerxes.*

Vol. 62, # 447, cover picture: Figwort Sawfly *Tenthredo scrophulariae*, not Norwegian Wasp *Dolichovespula norwegica.*

Category status: additional errors

Vol 63, # 455, (*Ctenicera pectinicornis...*) p. 149: The latest edition of the provisional Click Beetle atlas (Mendel and Clarke, 1996) confirms the historical existence of a colony of *C. pectinicornis* in Bedfordshire (last recorded in 1966), but not its continuing presence in this county, although as Howard Mendel (pers. comm.) has kindly pointed out, it may not yet have disappeared from this county.

Vol 63, # 455, p. 134-141
The confusion of Fabre with Fabricius.
Periodically the two above authors on Lepidoptera are confused because of their similar names and the known tendency of some of these early authors to latinize their own names *e.g.* Linne became Linnaeus. I committed this gaff in the article on the Lepidoptera of Las Descargues, France (Bull. 63: 134-141). Fabre (Jean-Henri) lived from 1823-1915 and described the habits of Lepidoptera. Fabricius (Johann Christian, 1745-1808) was describing new species of moths some fifty years before Fabre was born. My thanks to Basil Harley for reminding me of this, and confessing making the same error in the past! The number of times I have written 1775 by one of the moth names given by Fabricius, I should not need reminding. *Paul Waring (AES 4220)*

Vol 62, # 451, (The British Stag Beetle Family...): All references to Alexander (1999) should refer to the following reference: Alexander, K.N.A., (2002), The invertebrates of living and decaying timber in Britain and Ireland – a provisional annotated checklist, *English Nature Research Report No. 467,* pp. 142, English Nature, Peterborough.

Vol 62, # 449, (An unusually large wasps nest ...) p. 136: "Common Wasp *Vespula vulgaris* and the German Wasp *Vespula vulgaris*" should read "Common Wasp *Vespula vulgaris* and the German Wasp *Vespula germanica*"

Vol 61, # 445, (Braunton Burrows...) p. 251: *Metrioptrea brachyptera* should read *Metrioptera brachyptera*; Scottish National Heritage should read Scottish Natural Heritage; p. 252: "the Warf Borer, *Nacerdes melanura* and the Darkling Beetle *Nacerdes melanura*" should read: "the Wharf Borer, *Nacerdes melanura* and the darkling beetle *Phaleria cadaverina*".

Category status: Forthcoming misnomer

The silver water beetles, *Hydrophilus piceus* and *Hydrochara caraboides*, which should be described as 'water beetles', are described in the colour plate section of the December *Bulletin* as 'diving beetles'. Good divers they are indeed, but cannot compare with the sheer propulsive power of the true diving beetles, the Dytiscidae.

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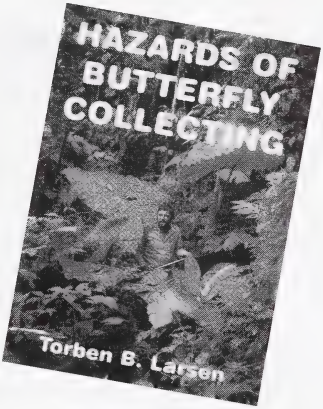

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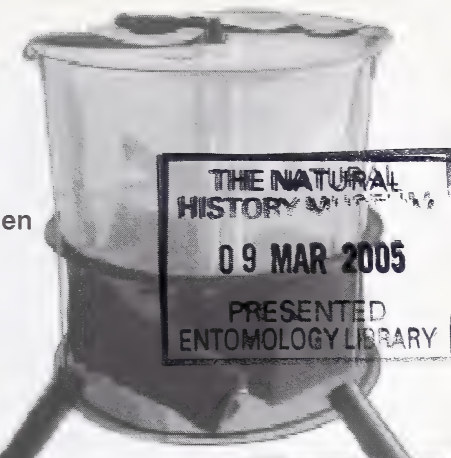

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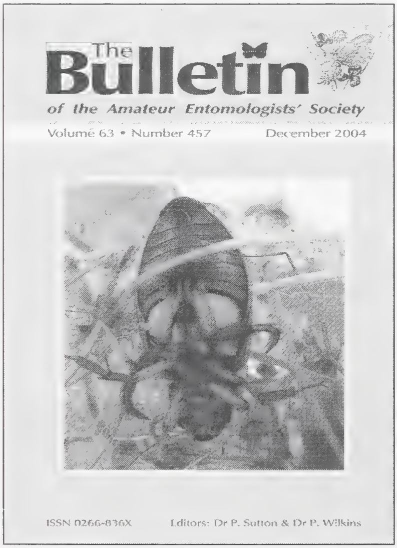
Bulletin Cover

The *Bulletin* cover picture shows a specimen of a male Great Diving Beetle, *Dytiscus marginalis* replenishing its air supply as it hangs below the surface of the water among the runners of Frogbit *Hydrocharis morsus-ranae*. This voracious hunter is by far the commonest and most widespread of our *Dytiscus* species, and can be found throughout the British Isles in well-vegetated still or slow-moving waters.



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Photograph: Peter Sutton

The **Bulletin**
of the Amateur Entomologists' Society

Volume 63 • Number 457 December 2004

Editorial

This has been a long time coming! So firstly, a sincere apology to all those who have been waiting for the "December" *Bulletin*, I hope that this issue has been worth the wait. The origins of this edition began, as described in the introduction, as I examined a strange Great Diving Beetle in my net many years ago as a boy. It was fuelled by my time in Devon, when I had the privilege of accompanying Dave Bilton and Clive Turner on trips to the Somerset Levels in 1997, who, through their skill with the net, allowed me to observe some of our rarest and most spectacular species of water beetle. The constant generosity of Professor Garth Foster provided a string of distribution maps for the larger British water beetles, and in turn reflected the progress of the forthcoming water beetle atlas as it took shape over the last eight years, and finally, when I approached Phil Wilkins to illustrate these species in colour four years ago, it appeared that we were in a position to put something good together for the benefit of AES members. Clearly this took a lot longer than expected, primarily due to our respective work commitments, but also due to the sort of excuse that my good friend and co-editor was prepared to throw into the ring:

"I had intended to do them this weekend but one of the cows escaped..."

Nevertheless, we got there, and it is with great pleasure and a degree of relief that this issue is put forward.... I hope that it provides a useful addition to the bookshelf. This, however, is not the whole picture, and a stand-alone publication will be published by the AES in due course containing, in addition to what is covered here, the following sections on: defence (physical and chemical); parasites and predators; analysis of past, present and future distributions; conservation of Britain's water beetles; and global warming (including the possible arrival of *Cybister lateralimarginalis*).

Finally, sincere thanks must go to the team at Cravitz Printing, (who, I understand, opened a 'book' on whether the February issue would be published before the December issue) for their outstanding efforts regarding the production of this *Bulletin*.

Peter Sutton

The larger water beetles of the British Isles

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Early recollections: the quest for knowledge

My interest in aquatic life was first kindled through the study of natural history books at a primary school in West Sussex. This quickly developed into a voyage of discovery, armed with home-made net, jam jar, and a pointless pair of wellington boots which, in addition to being leaky, were frequently filled to the brim by over-zealous excursions away from shallow bank-side margins.

The local millpond was the focus of much attention for myself and a growing band of enthusiasts, and the source of many great triumphs, including our first Great Diving Beetle *Dytiscus marginalis*. Even now, over a quarter of a century later, I can recall with absolute clarity the expressions on our faces when our collective efforts resulted in the capture of that mighty beast. Readers may remember a past reference to another site of interest, the "Grannies ponds" (Sutton, 2002a), which included a remarkable little woodland pond that was full of decaying leaves. This pond had little, if any, higher plant life, but contained large quantities of tadpoles, Water Hog Louse *Asellus aquaticus*, and smaller crustaceans including 'clouds' of *Daphnia* species. Consequently, as indicated in the extract below, it was capable of producing unfeasibly large populations of predatory diving beetles:

> "The other was a small round pond, deep and murky, and heavily shaded by large Oak trees and Rhododendrons. It was this latter pond, which kept its water throughout the year, that was extraordinary, and to this day, I have not encountered one similar. For some reason, this dark, shaded pond, seemed to retain tadpoles for most of the year, and since there were always *Daphnia*, algae and other food present, I can only speculate that their growth was somehow retarded by the light deficient conditions, or the mass of decomposing leaf litter at the bottom of the pond. Either way, the 'magical' properties of this pond meant that long after the tiny frogs and

> toads at the millpond had begun their terrestrial existence, tadpoles with no hint of a limb could still be collected from the top Grannies pond. This pond also, unsurprisingly, became a fabled site for those wishing to catch Great Diving Beetles."

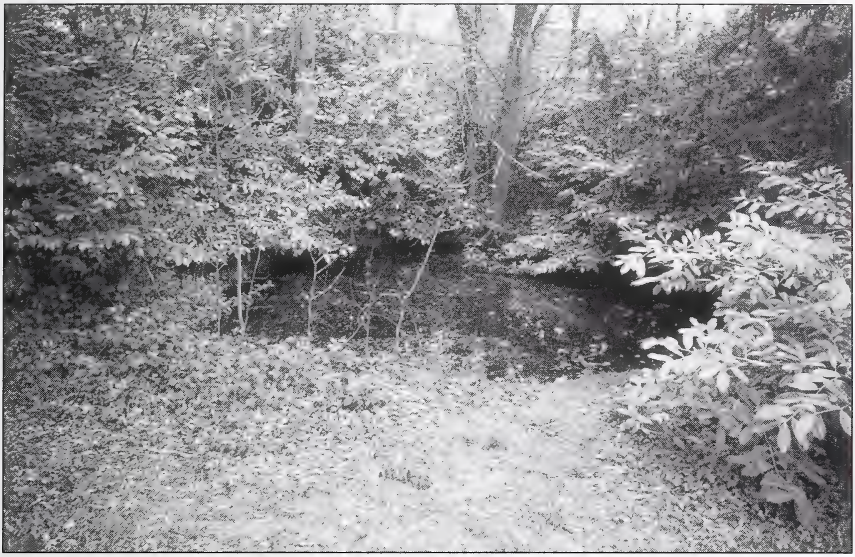


Figure 1. The top Grannies pond.

Some of those boyhood memories remain indelibly etched on the mind, and on one occasion, we were rendered absolutely speechless while watching a group of Whirligig Beetles dance on the still surface of a pond. As we crouched at the bank-side, mesmerized by their ceaseless circling, the yellow-collared head of a Grass Snake rose slowly out of the water, like a miniature Loch Ness monster, scattering the beetles in all directions, before sinking back into the mysterious murky depths from where it had first appeared.

By the age of twelve, I had observed much, and was familiar with the startling squeak of the Screech Beetle *Hygrobia hermanni*, the vampire-like 'fangs' of certain large water beetle larvae, and the remarkable speed of that aquatic flying saucer, the Lesser Diving Beetle *Acilius sulcatus*. However, of all the species that I had encountered, it was that denizen of the aquatic margins, that grand prize, the Great Diving Beetle, which maintained a special fascination on the rare occasions that it appeared, alive and kicking at the bottom of my net.

The seeds for this article were sown all those years ago, when I examined the contents of my net as it rested upon a partially submerged shopping trolley at that same millpond.

To clarify, I had found what I thought was a Great Diving Beetle, but it appeared to be, somehow, unusually different. The specimen that I found was subsequently identified, from my Octopus book of Insects (Zahradnik, J., 1977), as *Cybister lateralimarginalis*, which was described as being, "rarely seen in the British Isles." This was again confirmed by the Blandford publication, *Beetles in colour* (Lyneborg, 1977), and would also have been confirmed, if it had been available at the time, by Chinery (1986), who maintained this tradition of covering the larger dytiscids with the standard depiction of *Dytiscus marginalis*, *Dytiscus latissimus*, and *Cybister lateralimarginalis*.

Of course it is clear to those who study the aquatic Coleoptera, that the only British species fitting the general description of *C. lateralimarginalis*, which is likely to be found in a typical eutrophic lowland lake in southern England, is *Dytiscus semisulcatus*, and that, indeed, is what it was. Neither *Cybister lateralimarginalis*, a warmth-loving species which is the only European member of a predominantly tropical genus, or *D. latissimus*, the largest European dytiscid, are found in the British Isles. I was subsequently able to confirm this identification when I found the work of Linssen (1959) at my new upper school library. Finding these two volumes was akin to suddenly finding oneself in the presence of a learned tutor, with all questions being answered in glorious technicolour. Among other revelations, I was amazed to find that there were in fact six species of *Dytiscus* to be found in the British Isles.*

Therein is provided the impetus for this article. Linssen is the only 'modern' publication which attempts to provide colour illustrations of the larger Dytiscidae (although not the larger Hydrophilidae), but it is a costly collectors item. Where, in other available literature, are colour illustrations or photographs of our spectacular aquatic coleopteran megafauna? In terms of available information, more comprehensive details and descriptions of these species are available, but can only be found in specialist publications, many of which, again, are either too scarce or too costly to obtain. Even in these publications, there is little accurate data concerning the current status and distribution of British species. In short, for the amateur enthusiast (and even the professional entomologist), there are no publications which attempt to provide a concerted body of data regarding the status and distribution of Britain's larger aquatic coleopteran fauna, a key to their identification, descriptive information regarding their requirements, and appropriate illustrations and/or photographs of each species.

---

* Some years later I was given the opportunity to purchase one of these volumes, which proved to be a particularly nostalgic affair, not least because it happened to be the volume where mirthful students had labelled four members of the Curculionidae as John, Paul, George and Ringo.

It is hoped that this article goes some way to providing a useful up-to-date account of the species described.

Checklist

This article describes the two largest members of the Hydrophilidae and the largest members of the Dytiscidae to be found in the British Isles. The Hydrophilidae described are the Great Silver Water Beetle *Hydrophilus piceus* and the Lesser Silver Water Beetle *Hydrochara caraboides*.[1]

The Dytiscidae described are the Great Diving Beetles, *i.e.* the six British members of the genus *Dytiscus*, and the Lesser Diving Beetles, *i.e.* the two British members of the genus, *Acilius*.

The checklist below has been prepared with the aid of the annotated checklist provided by Foster (2004), and the work of Pope (1977), and Duff (2004a). (Foster's checklist has in turn been informed by the work of Nilsson (2001, 2003, 2004) who has endeavoured to develop a world checklist for the aquatic Coleoptera.)[2]

Subfamilies and tribes have been included to aid the grouping of the species listed below.

Order COLEOPTERA

Suborder ADEPHAGA Clairville, 1806
Family DYTISCIDAE Leach, 1813
Subfamily DYTISCINAE Leach, 1813

Tribe ACILIINI Thomson, C.G., 1867

ACILIUS Leach, 1817
canaliculatus (Nicolai, 1822)
sulcatus (Linnaeus, 1758)

---

[1] ***Erratum*** Please note, the silver water beetles in colour plates 3, 4 and 5 have erroneously been referred to as silver diving beetles!

[2] Foster (2004a) is currently preparing another checklist for the Polyphaga, which includes the Hydrophilidae, to be published in due course (presumably in *The Coleopterist*).

Tribe DYTISCINAE Leach, 1813

DYTISCUS Linnaeus, 1758
circumcinctus Ahrens, 1811
    nominate _ form with sulcate elytra
    _ form with smooth elytra, var. *flavocinctus* Hummel, 1823
circumflexus Fabricius, 1801
    nominate _ form with smooth elytra
    _ form with sulcate elytra, var. *dubius* Audinet-Serville, 1821
dimidiatus Bergsträsser, 1778
lapponicus Gyllenhal, 1808
marginalis Linnaeus, 1758
semisulcatus O.F.Müller, 1776
    formerly known as *punctulatus* Fabricius, 1777

Suborder POLYPHAGA Emery, 1886
Superfamily HYDROPHILOIDEA Latreille, 1802
Family HYDROPHILIDAE Latreille, 1802
Subfamily HYDROPHILINAE Latreille, 1802
Subtribe HYDROPHILINI Latreille, 1802

HYDROCHARA Berthold, 1827
caraboides Linnaeus, 1758 Lesser Silver Water Beetle

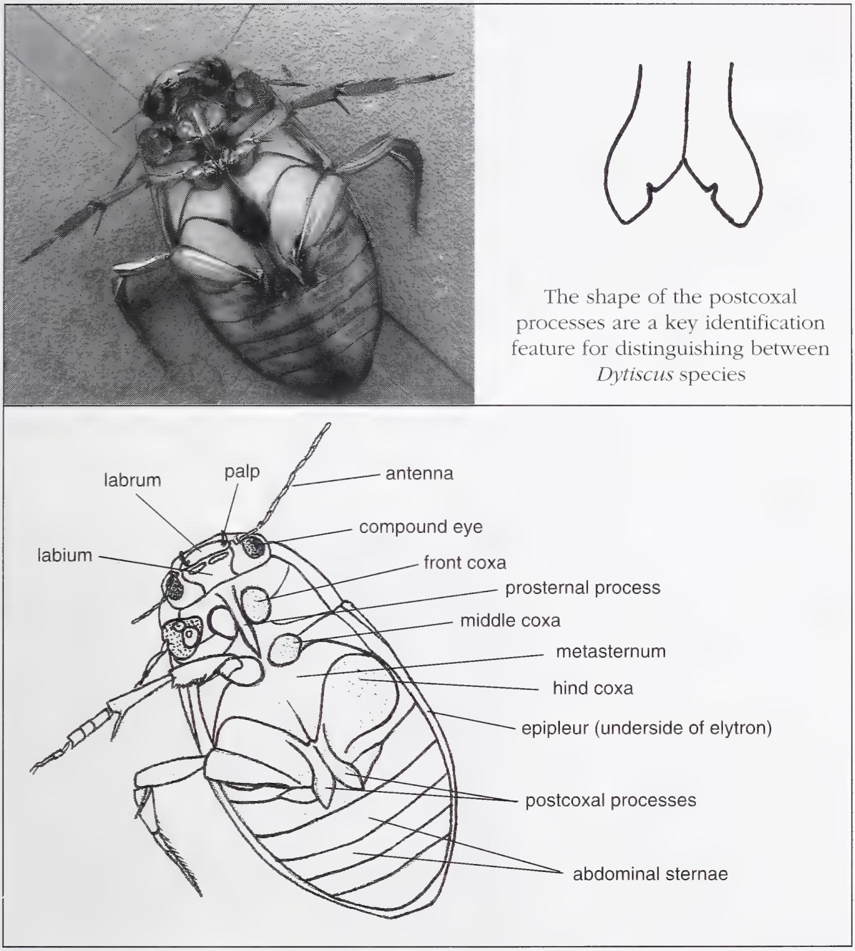
HYDROPHILUS Geoffroy, 1762
    HYDROUS Linnaeus, 1775
piceus Linnaeus, 1758 Great Silver Water Beetle

The larger British water beetles, a comparison of the families: Dytiscidae and Hydrophilidae

The larger British water beetles can be divided into two groups, the Dytiscidae and the Hydrophilidae.

The Dytiscidae are often referred to as the 'true diving beetles', and are highly adapted to life in water. They are dorsoventrally flattened, stream-lined, and swim rapidly with the aid of muscular, hair-fringed hind legs. There are approximately 4,000 species known worldwide (McGavin (1992) states 3,500), of which 111 (Linssen, 1959; Harde, 1998) occur in Britain. The larvae and adults of the Dytiscidae are all carnivorous and range in size from 1 mm to over 35 mm.

The Hydrophilidae is a family of beetles which, contrary to the implication that its members are all associated with life in water, contains both aquatic and terrestrial species. Those that do live an



The shape of the postcoxal processes are a key identification feature for distinguishing between *Dytiscus* species

Figure 2. The underside of a true diving beetle (Dytiscidae).

aquatic existence are referred to as 'water beetles', but the degree of adaptation to aquatic life, and accordingly, the degree of association with aquatic habitats, can vary considerably. Indeed, as Foster (2004a) points out, the problems associated with the production of a checklist for these members of the Polyphaga are effectively encompassed by the question: "what constitutes a water beetle?" (In this article the Dytiscidae and Hydrophilidae described are treated as water beetles *sensu lato*.) Lyneborg (1977) states that, of the 2000 species of

Hydrophilidae that are known worldwide, 118 have been recorded from Britain.[3] The majority of these spend their whole lives in water, while some live in the immediate vicinity of aquatic habitats, and others live on land in a variety of habitats including dung *e.g. Sphaeridium scarabaeoides*, and seaweed *e.g. Cercyon littoralis*. The two members of the Hydrophilidae described in this article are generally recognized as being essentially herbivorous, but could, like many aquatic hydrophilid species, equally be described as omnivorous scavengers.[4] It should also be noted that the Great Silver Water Beetle, through its occasional desire to take live water snails (as observed by Balfour-Browne, 1958), has carnivorous tendencies. They range in size from 1 mm to 48 mm.

The Dytiscidae can be quickly separated from the Hydrophilidae on the basis of two anatomical features: the spatial arrangement of the legs (Figures 2 and 4) and the structure of the antennae (Figures 3 and 4).

Figure 2 shows the general anatomical features of the underside of a true diving beetle. It can be seen that the first two pairs of legs are close together in the upper half of the body, and the powerful hind legs, which beat in unison whilst propelling the insect through water, are positioned in the lower half of the body. This mode of swimming allows them to pursue their prey at speed, and the larger dytiscids, which are known for their predatory abilities, have even been observed chasing and catching small fish.

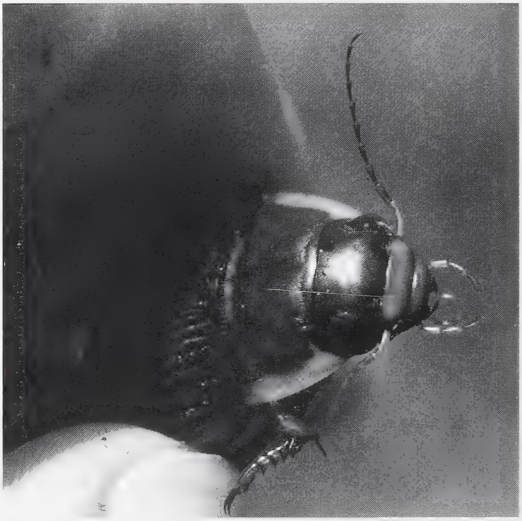


Figure 3. *Dytiscus dimidiatus*, showing the long filiform (thread-like) antennae that distinguish the Dytiscidae from the Hydrophilidae.

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[3] A new species of hydrophilid, *Dactylosternum abdominale*, which is associated with decaying vegetable matter, was discovered in August 2003 by Tony Allen and has recently been added to the British list (Duff, 2004b)

[4] The Rev.G.C. Bateman (1890), whose writings indicate that he was an accomplished observer of the habits of aquatic beetles noted that, "Though this beetle is generally described as herbivorous, it will occasionally, at any rate while in captivity, partake of animal food."

Figure 3 shows the typically long thread-like antennae of the Dytiscidae, which are eleven-jointed, smooth, shiny, without pubescence and considerably different to the antennae of the Hydrophilidae (Figure 4). In hydrophilid beetles, the maxillary palps are longer than the antennae. In the two aquatic hydrophilids described, these palpi take on the function of the antennae, and are used as sensory organs for touch and smell. The antennae themselves are short and clavate (clubbed) and play a vital role in the replenishment of the beetle's air supply. The clubbed end of each antenna has four or five segments, and these antennae contain a total of nine-segments each.

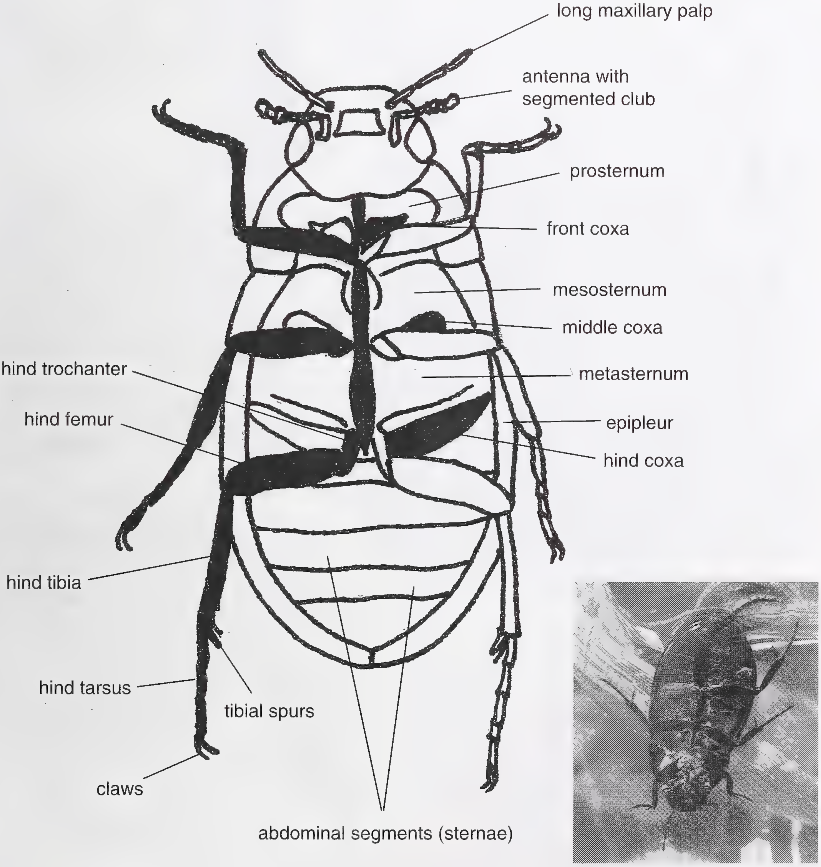

Figure 4. The underside of an aquatic hydrophilid beetle. **Note:** The mid and hind tarsi of the Lesser Silver Water Beetle (inset) are well-fringed with swimming hairs.

Figure 4 shows the general anatomical features on the underside of a hydrophilid beetle. It can be seen that the legs are all roughly an equal distance apart. Unlike the true diving beetles, which hold the front two pairs of legs under the body while swimming, all six legs of hydrophilid beetles are used and alternate as they move through the water. In the words of Bateman (1890), "The former may be said to swim somewhat similar to a frog, and the latter like a dog."

The Hydrophilidae have a different lateral profile to the Dytiscidae. The Lesser Silver Water Beetle in Figure 5 shows the flat underside and strongly convex upperside which is a typical feature of hydrophilid water beetles. In the Dytiscidae, both upper and undersides are convex, the profile being similar to that of a lens.

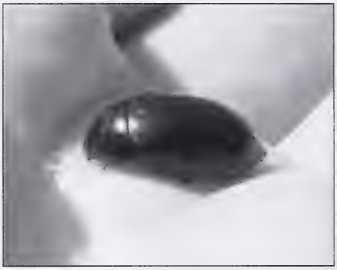

Figure 5. The Lesser Silver Water Beetle *Hydrochara caraboides* shows the typically flat underside and strongly convex upperside of the larger Hydrophilidae.

There is a popular misconception that all members of the Hydrophilidae are poor swimmers and statements describing the aquatic abilities of this family include: "Neither the larvae or adults are adapted for swimming", and, in the case of the ARKive project[5], "the silver water beetles are not particularly adapted for underwater life. They are poor swimmers without the modified legs of diving beetles." While it is true that the majority of species, particularly those which spend their lives simply crawling over submerged vegetation, are poor swimmers, this is certainly not the case for the two species described in this article.

Foster (1991) reveals that, "Some hydrophilids scattered through several genera have swimming hairs on the mid and hind tibia and/or tarsi and these species can dive below the water's surface, *e.g.* the *Berosus* species, performing as agilely as the dytiscids." Joy (1932) notes that the middle and hind tarsi of the two hydrophilids described are, "strongly compressed for swimming."

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[5] The ARKive project is an outstanding initiative that aims to provide images and movie clips of life on Earth, with an emphasis on scarce and threatened species. It also, commendably, attempts to provide facts about the status, description, range, habitat, biology, threats and conservation of species, although for some species, these data need revising/updating.

The photograph in Figure 4 shows that the appreciable aquatic agility of the Lesser Silver Water Beetle is attributable to the considerable number of swimming hairs that line the tarsi of its middle and hind legs.

The Great Silver Water Beetle is similarly endowed with these swimming hairs, and during observations of this species on the Somerset Levels, I have been greatly impressed by the speed at which this large and obviously buoyant beetle can swim down to the bottom of a rhyne, albeit with the characteristic hydrophilid 'wobble'.

Modified tarsi (males only)

The males of the Dytiscidae have forelegs which are modified into structures that are used for holding females during the process of pairing. In the genus *Dytiscus*, this structure is highly developed, and

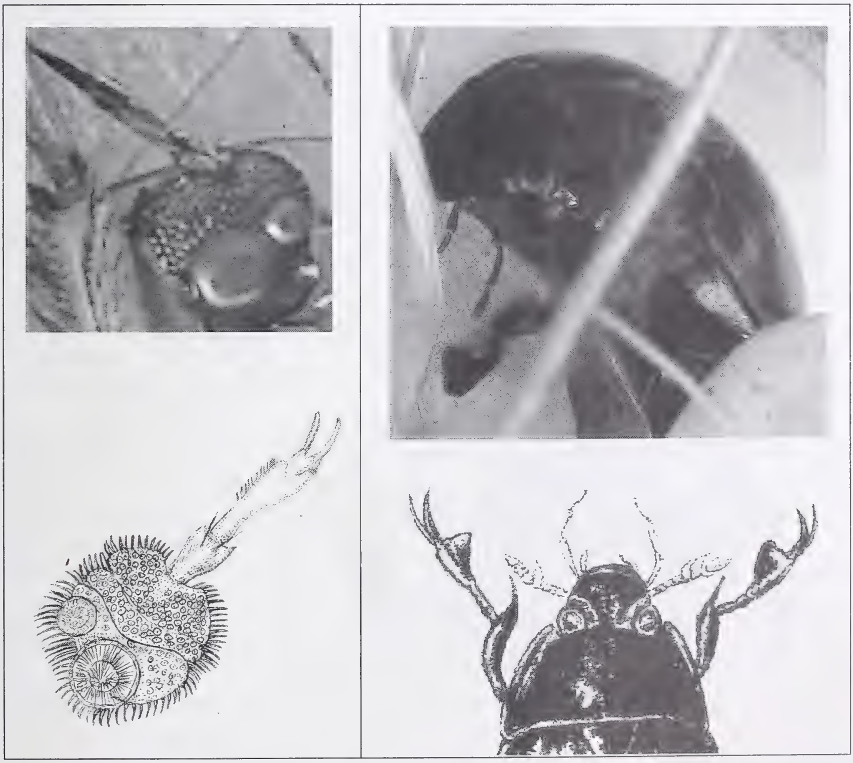


Figure 6. A comparison of the modified forelegs of male *Dytiscus* (left) and *Hydrophilus* (right) species.

the first three segments on the tarsus of each foreleg in the male are dilated to form a circular adhesive pad. Each pad has two cup-like suction discs, one large and one medium-sized, which are surrounded by about 150 smaller suckers (Figure 6). The middle pair of tarsi also possess a number of smaller suction discs (Zahradnik and Chvala, 1989). The adhesive pads and their suckers produce a glutinous secretion which aids attachment to the female during pairing. Those on the forelegs are attached to the prothorax and those on the middle legs are attached to the elytra. Clegg (1974) writes, "...in this way I have seen captive specimens swim together, the male carrying the female, for hours at a time."

The males of *Acilius* species also have modified tarsal segments on their forelegs which are similar to those of *Dytiscus* species, but instead of two larger suckers on each adhesive pad, there are three, one of which is very large (Figure 7).

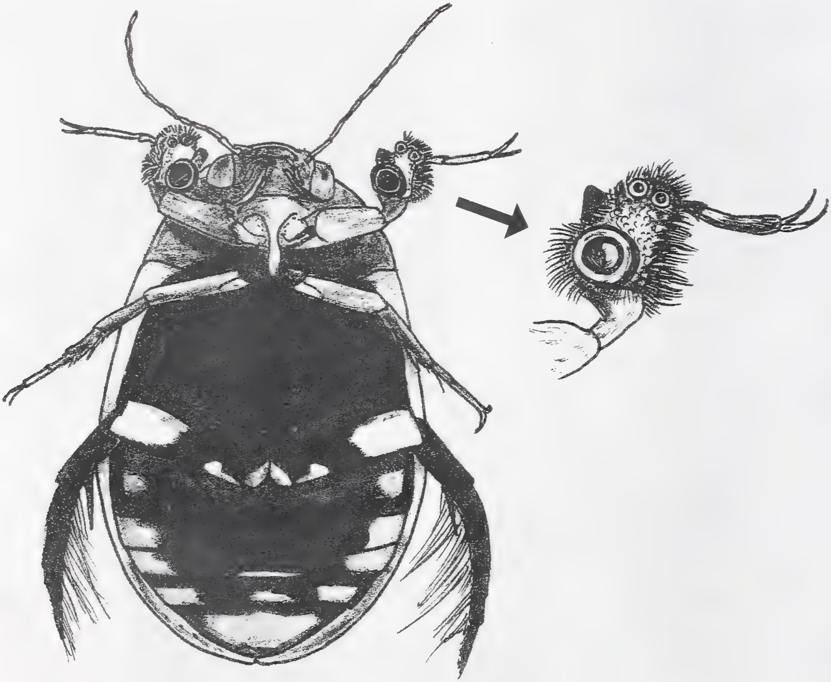


Figure 7. Underside of the male Lesser Diving Beetle *Acilius sulcatus* showing the modified tarsus of the foreleg in detail. Like *Dytiscus* species, the adhesive pad is covered in small suckers and has three larger suckers, one of which is very large.

In the hydrophilids, the forelegs of the males are also modified and are used to hold the female during pairing.

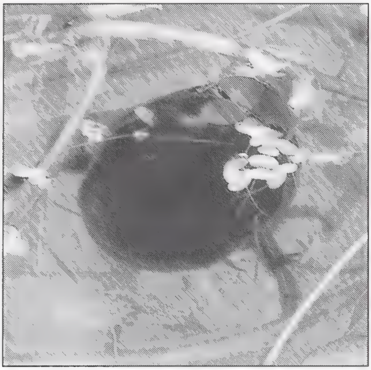
Male specimens of the Lesser Silver Water Beetle possess claws (protarsi) on the tarsus of each foreleg which are markedly angled in order to grasp the female. Boyce (2004) provides illustrations showing the structural difference between the protarsi of the male and female (which is the only obviously discernable evidence of sexual dimorphism in this species), which are described as being: "strongly curved basally, then straightened distally in the male, while in the female they are less abruptly, but more evenly curved from base to apex." In the Great Silver Water Beetle, this modification is developed to a much greater degree, and in the male, the tarsus of the foreleg is dilated into a large triangular plate (Figure 6).

Taking air

The adults and larvae of water beetles need to periodically replenish their oxygen supply with air from the atmosphere. This requirement, coupled with the need to complete the last phase of their metamorphosis on land, reveals the terrestrial origins of the aquatic Coleoptera. (The eggs of some aquatic species are also laid on land, and in the case of the two hydrophilids described, they are deposited in floating silken cocoons that are impervious to water.)

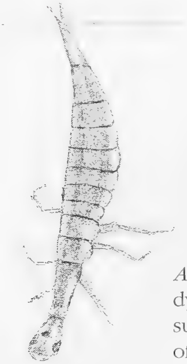
The adults of dytiscid and hydrophilid water beetles are markedly different in the way that they obtain oxygen from the atmosphere. The dytiscids replenish their air supply by floating to the surface, abdomen first. When the tip of the abdomen breaks the surface, the elytra are raised slightly as they renew the reservoir of air, which is held between the upper surface of the abdomen (which is covered in fine hairs), and the underside of the elytra. There are also two pairs of large spiracles at the apex of the abdomen which come into contact with the atmosphere during this process. Linssen (1959) states that, "These two pairs of spiracles are much larger than the seven preceding pairs, which of course remain under water whilst air is being taken and indeed are merely rudimentary and non-functional."

The hydrophilids, in contrast, approach the surface head first, and break the surface film with the aid of their clubbed antennae. During this process, the beetle characteristically tilts its head to one side (see Plate 5). The hairs on the antennae combine with hairs on the head to form a funnel down which air travels to the subelytral reservoir and to the plastron (the silvery film of air clinging to unwettable hairs on the



Dytiscids replenish their air supply by breaking the water surface with the tip of their abdomen

The silver water beetles break the surface film head first with the aid of their antennae. The shimmering film of air on their underside gives rise to their popular name.



Acilius sulcatus larva taking air. The larvae of both dytiscids and aquatic hydrophilid species take air at the surface with the aid of two hair-fringed lobes at the end of the terminal abdominal segment.

Figure 8. Taking air.

underside of the thorax and abdomen, which gives the silver water beetles their popular name), which in turn is in contact with the spiracles. During my own observations of the Great Silver Water Beetle, I have noticed that the plastron actively and rhythmically pulsates as the beetle recharges its air supply, which presumably aids the expulsion of 'spent' air.

The plastron acts as a permanent physical gill, and is quite capable of supplying all of the oxygen requirements of the beetle when sufficient oxygen is dissolved in the water, allowing it to remain permanently submerged. This is because there is a continuous exchange of gases between the plastron and the surrounding water. Consequently, in summer, when, for a variety of reasons, particularly increased water temperature, oxygen levels in the water are lower, and also, through increased levels of activity, the beetle's oxygen demands are greater, it needs to rise to the surface to renew its air supply. In winter, when water contains more dissolved oxygen, and, through minimal activity, the beetle's oxygen requirements are lowered, the plastron is capable of supplying all of the oxygen requirements that the beetle needs to survive, allowing it to remain submerged at the bottom of the water body.

Life histories

Egg development and parental care

In *Dytiscus* species, females lay their cigar-shaped eggs singly in the stems and leaves of water plants. The eggs are inserted into slits, which the female cuts into the plant tissue using a sharp ovipositor. Females, which can live for more than a year, may oviposit twice during their lifetime.

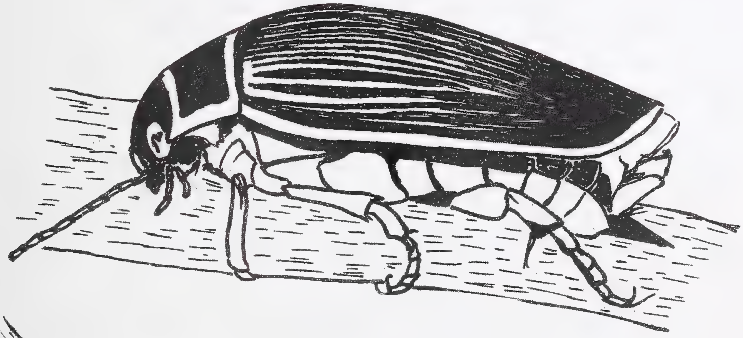


Figure 9. Female *Dytiscus* species use their ovipositor to insert eggs into the stems or leaves of aquatic plants.

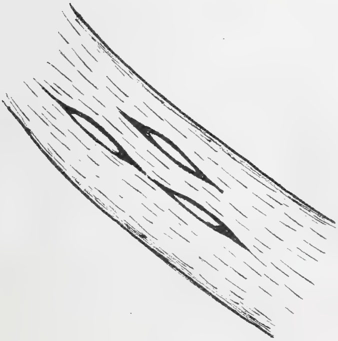


Figure 10. The cigar-shaped eggs of *Dytiscus* species inserted into the stem of an aquatic plant.

The female of the Lesser Diving Beetle *Acilius sulcatus*, simply drops her eggs at random in mud at the bottom of ponds (Clegg, 1974; Thompson, Coldrey and Bernard, 1985). Little is known about the egg-laying habits of *A. canaliculatus*, which may possibly behave in a similar manner in its preferred habitat.

Certain members of the Hydrophilidae, including the two species described, are known for exhibiting a degree of parental care and protect their eggs in cocoons which are made of silk. These elaborate cocoons, which have a papery texture, are impervious to water and float on the surface of water bodies. They also have a hollow vertical 'mast' which is used to ensure that the developing eggs have adequate ventilation.

The females of both species are equipped with silk-producing glands and the cocoons are woven using threads of silk produced by two small spinnerets situated at the end of the abdomen.

The cocoon of the Lesser Silver Water Beetle is very well camouflaged by leaf fragments which are folded around the outside of the cocoon (Figure 11). They are, however, easily recognised by the silken air tube, which protrudes through top of the leaves (Plate 4). The leaves used to camouflage the cocoon are usually dead leaves that have fallen from deciduous trees, *e.g.* Oak and Sallow. In the Somerset colonies, it has been shown that most of the breeding sites are at least partially shaded, usually by Sallow or Silver Birch, which provides a plentiful supply of dead leaves to camouflage the cocoon. It has also been noted that this shade keeps the water bodies free from excessive duckweed growth, which provides cover for predators, and is probably why the egg cocoons are positioned in areas of clear water away from such growth (although as mentioned below, the cocoon must not be too far from appropriate vegetation.)

In the Cheshire colonies (Guest, 1996a, 1996b), it has been observed that other leaf fragments from a variety of aquatic plants *e.g.* Bittersweet and Forget-me-not, may also be used in the construction of the camouflaged cocoon. These cocoons, which are about 20 mm in diameter, are found floating in small clear areas of shallow water which is typically around 15 cm, but never deeper than 30 cm. (Boyce (2004) recorded the depth of water given with the location of each egg cocoon during his survey of this species on the Somerset Levels: "of 74 egg cocoons recorded during the two years (2001-2002), 70 have been in water less than 20 cm deep, most being in water much shallower than this.") It has been noted that the close proximity of appropriate vegetation is, "critical to the subsequent survival of the larvae" at the

Cheshire sites, and that the cocoons are not found in areas that are contaminated with filamentous algae (Guest, 2001).

The silken cocoons of this species have been found from late April to late June. The internal structure of the cocoons, in which the eggs (typically 50-60 per cocoon for both species) are attached by silken strands, has been discussed by Balfour-Browne (1958). In this work, Balfour-Browne writes, "It is to be noted that the air space in the cocoon (which is filled with flossy silk) varies in its position. In *Hydrophilus* it is below the eggs, these being placed vertically, bottom end upwards and near to the roof of the cocoon, while in *Hydrochara* the vertical eggs are sitting on the bottom of the cocoon with the air space above them." (The orientation of the egg is easily determined by the position of the eye of the larva, which can be seen through the transparent shell.) Apparently, the adult female can spin a cocoon and lay her eggs within three hours (Zahradnik, J. and Chvala, M., 1989). Further detailed information on the construction of the egg cocoon is provided by Maillard (1970).

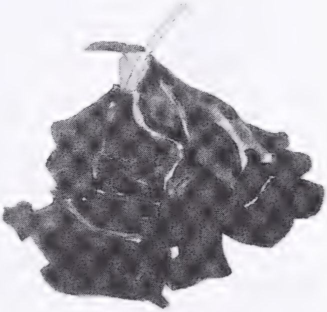


Figure 11. The conspicuous air tube protrudes from the top of the silk egg cocoon of the Lesser Silver Water Beetle, which is typically surrounded by decaying leaves and other organic debris.

The egg cocoon of the Great Silver Water Beetle is produced in the same manner as its smaller cousin, but is not wrapped in leaves, although it is often attached to the aerial shoots or leaves of water plants. It may also have plant material adhering to it (Figure 12). Clegg (1974) has noticed that, "even when floating loose it seems to be strongly attracted to fixed objects, probably through some manifestation of the surface tension of the water", and that, "females may make more than one egg case in a season." The females produce the egg cocoons in spring.

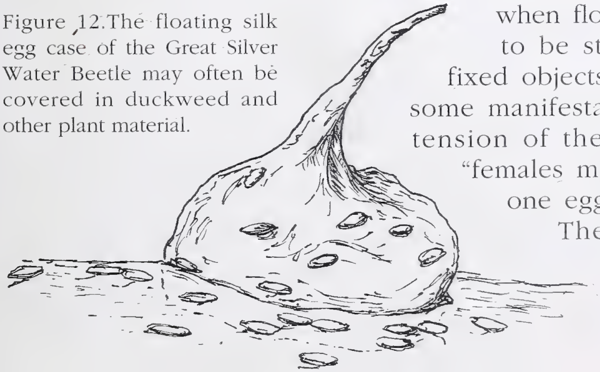
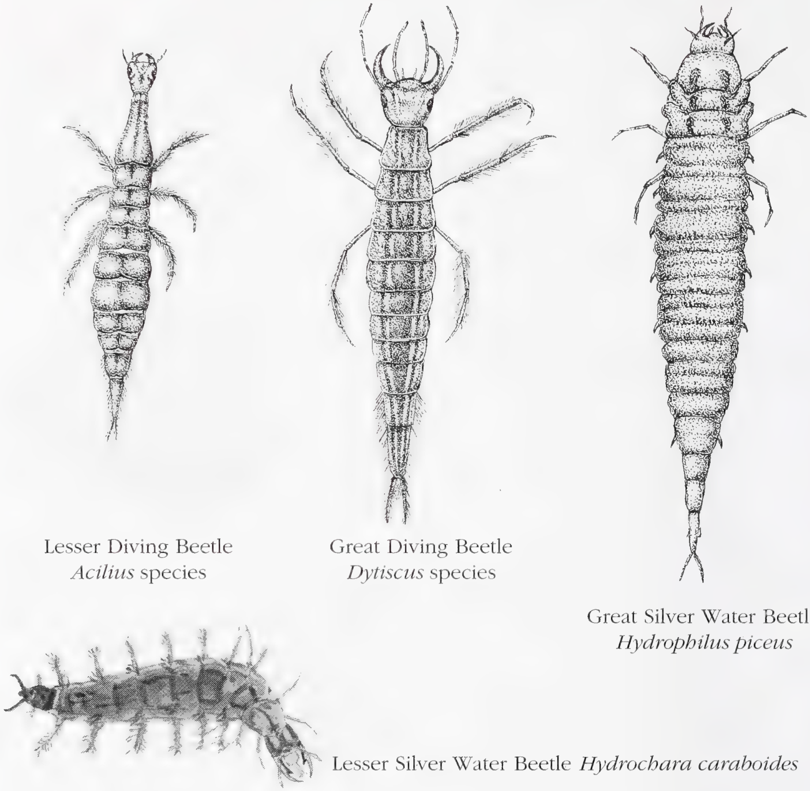


Figure 12.The floating silk egg case of the Great Silver Water Beetle may often be covered in duckweed and other plant material.

The larvae of Britain's larger water beetles



Lesser Diving Beetle
Acilius species

Great Diving Beetle
Dytiscus species

Great Silver Water Beetle
Hydrophilus piceus

Lesser Silver Water Beetle *Hydrochara caraboides*

Figure 13. A comparison of the larvae of larger British water beetles.

The larvae of *Dytiscus* species have three pairs of thoracic legs that are fringed with hairs, and are used as efficient oars for swimming. They have eleven segments and the last two abdominal segments, and the terminal lobes, are also fringed with hairs which enables the larva to hang head downwards from the surface while it takes air in through the last pair of spiracles. The larvae are buoyant and must attach themselves to submerged material to prevent floating to the surface. Larvae of the genus *Dytiscus* may take up to a year to become fully developed, moulting three times during that period. They typically attain a length of about 50 mm. They may be found from May until October. It should be noted that the larvae of *Dytiscus semisulcatus*, unlike the other British *Dytiscus* species, can overwinter as larvae. Balfour-Browne (1950) describes the larva of *D. semisulcatus* as being, "readily distinguished from those of the other British species, as its head is more or less parallel-sided, whereas in all the others the head tapers away to a neck."

The larvae of *Acilius* species can be distinguished from *Dytiscus* species by their smaller size (up to 30 mm), and the greatly elongated first segment of its body which gives them the appearance of having a long 'neck'. These larvae also have hair-fringed legs for swimming and swim fairly slowly, although they can move quickly by thrashing their bodies in an undulating motion when disturbed. Balfour-Browne (1950), who bred *Acilius sulcatus* from newly hatched larvae observed that, "the first stage occupied seven days, as did also the second stage, while the third stage, up to the time of leaving the water, (to pupate) lasted about fifteen days." Larvae may be found from May until September.

The eggs of the Great Silver Water Beetle generally hatch after two weeks, but can take up to six weeks to hatch in cooler conditions. The larvae, which are very vigorous, bite their way out of the cocoon and crawl upwards to get their first 'drink' of air. They are denser than water and if they sink without reaching the surface, they will drown. The bubbles of air that the larvae swallow can be observed through their transparent alimentary canal, and these larvae can swell up to four times the size of the egg from which they emerged (Balfour-Browne, 1958). When they have become buoyant enough to prevent sinking, they can then take air in the usual manner, through the spiracles on the eighth abdominal segment. The mandibles of these larvae are characteristically uneven, and the reasons for this are provided in the section below describing their feeding habits. The larvae moult three times and when fully grown, are longer and thicker than those of *Dytiscus* species, attaining a colossal length of up to 70 mm.

A useful description is provided by Rye (1886): "The larva is, when fully grown, extremely long and stout, of a leathery texture, wrinkled transversely, and dirty brown in colour; the head is horny, flat on the upperside, and with strong projecting sharp mandibles; the legs are short, and the body contracts behind, having two openings at the extremity of the last segment, being the terminations of two great lateral tracheal tubes, through which the insect breathes." The larvae also have small lateral processes on the sides of the abdomen (Figure 13). Rye also adds, "....when handled, they become flaccid and emit a fetid black fluid from the end of the abdomen."

Although these larvae may appear to be large and robust, they are, in fact, very fragile creatures, and Bateman (1890) has noted that, "These larvae must be handled with great gentleness or they will die." These larvae develop faster than those of *Dytiscus* species, and have been recorded from May until August.

The larvae of the Lesser Silver Water Beetle are instantly recognised by the pairs of lateral processes present on each of the first seven segments of the abdomen. Contrary to their possible appearance as gills, these feathery processes have no respiratory function, and the larvae take air at the surface through a pair of enlarged spiracles on the eighth segment of the abdomen (those spiracles on segments 9 and 10 being small and rudimentary.) Detailed descriptions of the larva are provided by Böving and Henriksen (1938) and Balfour-Browne (1958). These larvae, which have a sandy brown colouration, are roughly half the size of Great Silver Water Beetle larvae when fully grown, attaining a length of up to 35 mm. Boyce (2004) suggests that the fine filaments on the lateral abdominal processes may also have a role to play in the camouflage of the larva and writes, "it is noticeable that final instar larvae tend to become coated in mud, and the filaments may be a means of catching sediment in order to camouflage the larva from predators." As with *H. piceus* there are three larval instars. The larvae have been recorded from late May until August.

Feeding habits

The larvae of *Dytiscus* species are strictly carnivorous and feed upon a great variety of aquatic life. Clegg (1974) summarizes: "The larva is, if anything, even more ferocious than the adult, and similarly disposes of any living creatures that it encounters." The typical mode of attack is to lie in wait with its sickle-shaped mandibles open until the prey moves to within striking distance. It will then lunge forward and impale its victim (Figure 14).

Each mandible is effectively a hollow suction tube crossed by a fine groove which runs the length of the mandible. Digestive enzymes produced in the gut are injected along the grooves into the prey so that the digestion of tissues can take place externally. When the enzymes have dissolved the body tissues of the prey, the pumping action of the pharynx sucks the resulting soup back through the hollow mandibles and into the gut for absorption.

Figure 15 shows the tough brown head of *Dytiscus dimidiatus* with its sickle-shaped mandibles. Once these mandibles have seized the

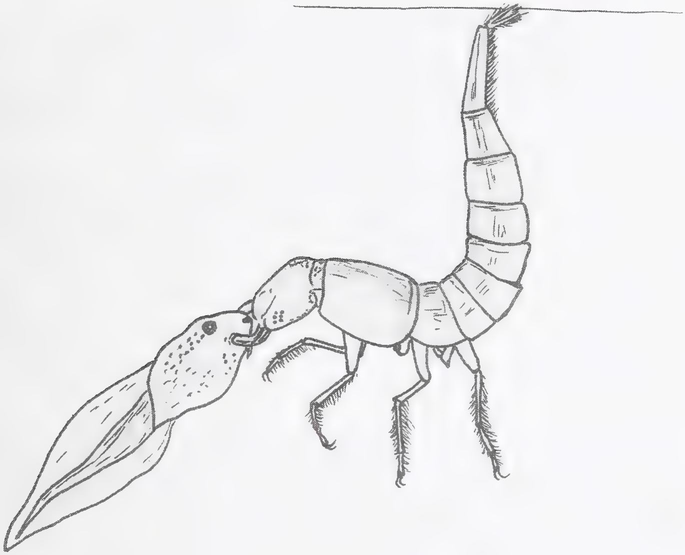


Figure 14. The larvae of *Dytiscus* species are voracious hunters and feed on a variety of aquatic life.

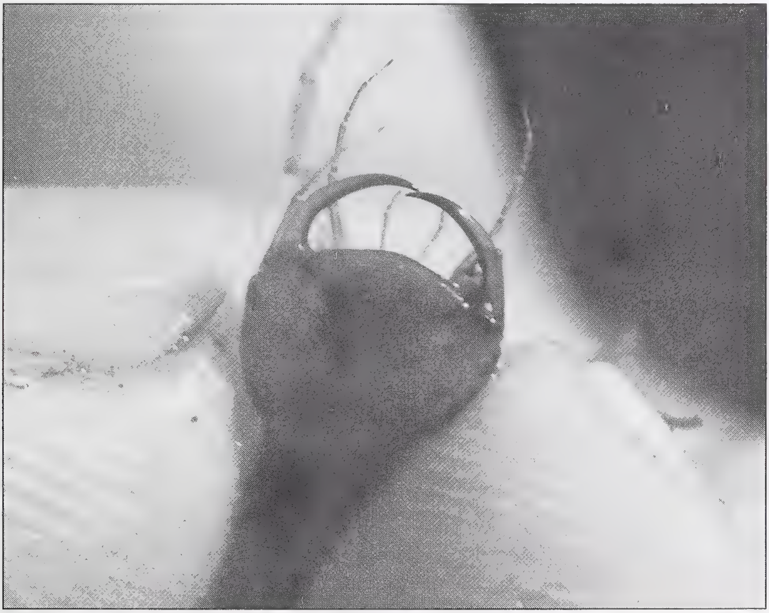


Figure 15. A close-up of the head of a *Dytiscus dimidiatus* larva showing its large hollow fangs.

prey, only those that prove too large for it to tackle manage to escape. It has been noted that both *Dytiscus* and *Acilius* species will vigorously shake their prey from side to side, which, in addition to stunning the prey as it tries to escape, undoubtedly facilitates the distribution of digestive enzymes into its body tissues.

Acilius species, like *Dytiscus* species superficially resemble certain crustaceans. Both types of larvae have a tan brown colouration and a translucent quality to their appearance, which explains why they have been likened to freshwater shrimps. This is particularly so for *Acilius* species, which have a habit of bending themselves double when caught in a net. *Acilius* larvae feed on a variety of smaller aquatic organisms from *Daphnia* and other small crustaceans to the larvae of flies and other aquatic insects.

For those who may be interested in rearing and studying the larvae of aquatic Coleoptera, the commoner dytiscids provide ideal subjects, and a very useful account, with details and diagrams of the equipment required, is provided by Luff (1991). The hydrophilids, in contrast, are not ideal. Apart from the fact that they have "fragile" larvae which can be difficult to rear, the two Red Data Book species described should not be collected for obvious reasons and in the case of the Lesser Silver Water Beetle, which is protected under Section 5 of *The Wildlife and Countryside Act*, it is illegal to do so. Previous authors have cited the collection of specimens as a cause of decline for the Great Silver Water Beetle, which was formerly a very popular aquarium 'pet'. Bateman (1890) writes, "…anyone, I think, who keeps them will come to the conclusion that they are the most interesting and the least trouble of any of the aquatic Coleoptera", and that they can be purchased for the sum of between, "1s. and 2s.6d. a pair, according to the dealer and the season." He also notes that they "seem to be rarer than formerly", and Wood (1871) offers enlightenment: "As it does not feed on other Beetles, it is in great request with the keepers of aquaria, and the ditches for miles around London have been ransacked by professional collectors, who sell the Beetles to the London dealers." Linssen (1959) is forthright in his opinions and says of this species, "…its very popularity as an aquarium inmate has brought about its disappearance from many localities where it was previously known to live….In an effort not to bring about its total destruction, naturalists refrain from publishing records regarding its present distribution when not guarded in nature reserves. It should be treated as a "protected" species and left alone."

The larvae of both hydrophilid species described come to the surface to feed, bringing their posterior spiracles into contact with the air as they do so. The larvae of the Great Silver Water Beetle, unlike the adults which are omnivorous, are exclusively carnivorous. Lyneborg (1977) indicates that the larvae of this species have a varied diet including insect larvae and tadpoles, and Balfour-Browne (1958) has noted that these larvae will accept chopped worms and insect larvae in captivity, but recorded the fact that they were never observed attempting to catch anything that moved rapidly. However, it is generally accepted that the larvae of this species are adapted to feed primarily on water snails, although different authors indicate different preferences. Linssen (1959), who is later (essentially) quoted by Clegg (1974), states that, "I have never known them take anything but water snails, particularly *Lymnaea*, which are seized by the powerful mandibles and carried about until only the shell is left."

Thompson, Coldrey and Bernard (1985) state that, "they feed on snails of the genus *Planorbis* (Ramshorn snails) which they curl round while they bite away the shell progressively to get at the contents", and provide a picture of a larva feeding on a *Planorbis* species. Figure 16 shows a Great Silver Water Beetle larva in characteristic feeding position as it feeds on a *Planorbis* species.

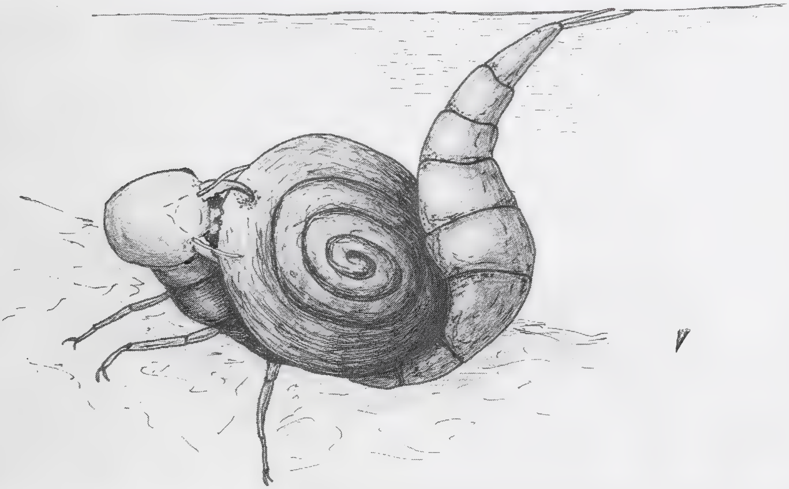


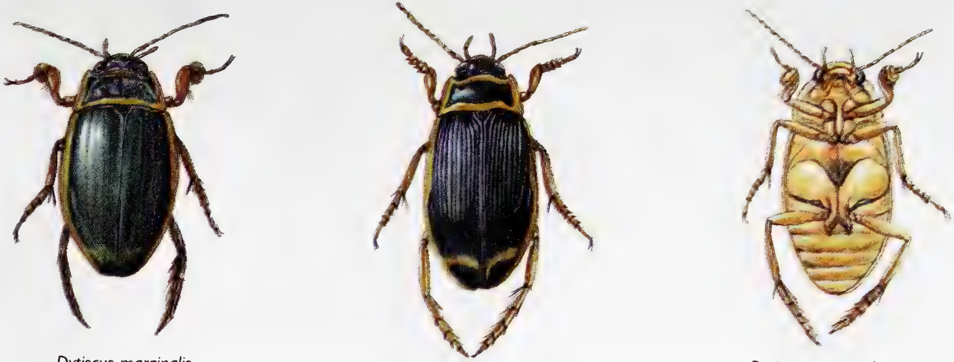
Figure 16. The larva of the Great Silver Water Beetle in a typical feeding position. These larvae fold their abdomen around the molluscan prey, while their terminal breathing lobes ensure a constant supply of air at the water's surface. Their heads, apparently, can move with great ease in every direction and this allows them to bend their heads backwards in order to progressively bite away at the shell and reveal its edible contents.

Balfour-Browne provides details and an illustration of the structure of the mandibles, and reveals that, "On the left mandible is a small blunt tooth near the apex. The function of this left mandible seems to be mainly to hold the prey while the right mandible cuts into it, an effective cutter of snail shells." An illustration of a larva feeding on a *Lymnaea* species is also provided. Beebee (1991) gives us the benefit of his observations: "The hefty jaws act as efficient "can-openers", crunching their way noisily through snail shells en route to their next meal."

The larvae of the Lesser Silver Water Beetle, in common with the majority of aquatic hydrophilid larvae, come to the surface not only to engage an air supply, but also to lift the prey out of the water in order to feed. The head and thorax of the larvae are lifted clear of the water during this process (Figure 17). Balfour-Browne (1958), who provides illustrations of the head and mouthparts, and of a larva feeding, summarizes: "The head and thorax are raised out of the water and the prey, held to the mouth by the antennae, maxillae and labium, is continually punctured by the "teeth" on the mandibles so that the juices escape and these are then sucked into the mouth. While the puncturing is going on, a digestive fluid is regurgitated which envelopes the prey and dissolves the otherwise insoluble parts so that, by the time the larva has finished with its meal, there is little left but the skin of the prey. This process, known as external digestion, takes place in a number of insects." The larvae hunt at the surface of the pond, crawling over mats of floating vegetation, and can often be seen hanging down from the surface by the tip of the abdomen.

The dietary requirements of the larvae of the Lesser Silver Water Beetle, as described by various authors include water snails, crustaceans, the larvae of other aquatic insects and even tadpoles. The fact that the mandibles are, like those of Great Silver Water Beetle larvae, unsymmetrical, seems to suggest that water snails might play an important part in their diet, and yet it appears from recent studies that this species is more inclined to snatch at more mobile prey items, particularly crustaceans, that stray too close to its formidable outsized mouthparts. The English Nature leaflet, *Conserving the Lesser Silver Water Beetle* (2003) describes the larvae as being, "voracious predators that feed on a variety of invertebrate prey, though water-lice (Water Hog Louse *Asellus aquaticus*) seem to be especially favoured." This is certainly the case for the Somerset colonies, and this crustacean also appears to be an important prey item for larvae in the Cheshire colonies.

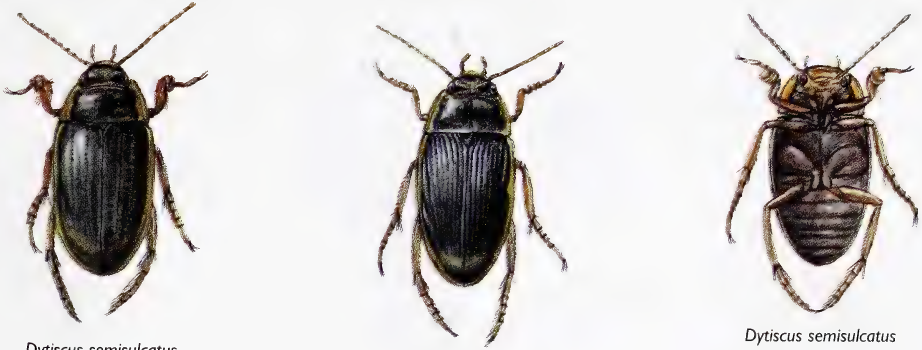
Dec1 .



Dytiscus marginalis
male

Dytiscus marginalis
female

Dytiscus marginalis
underside



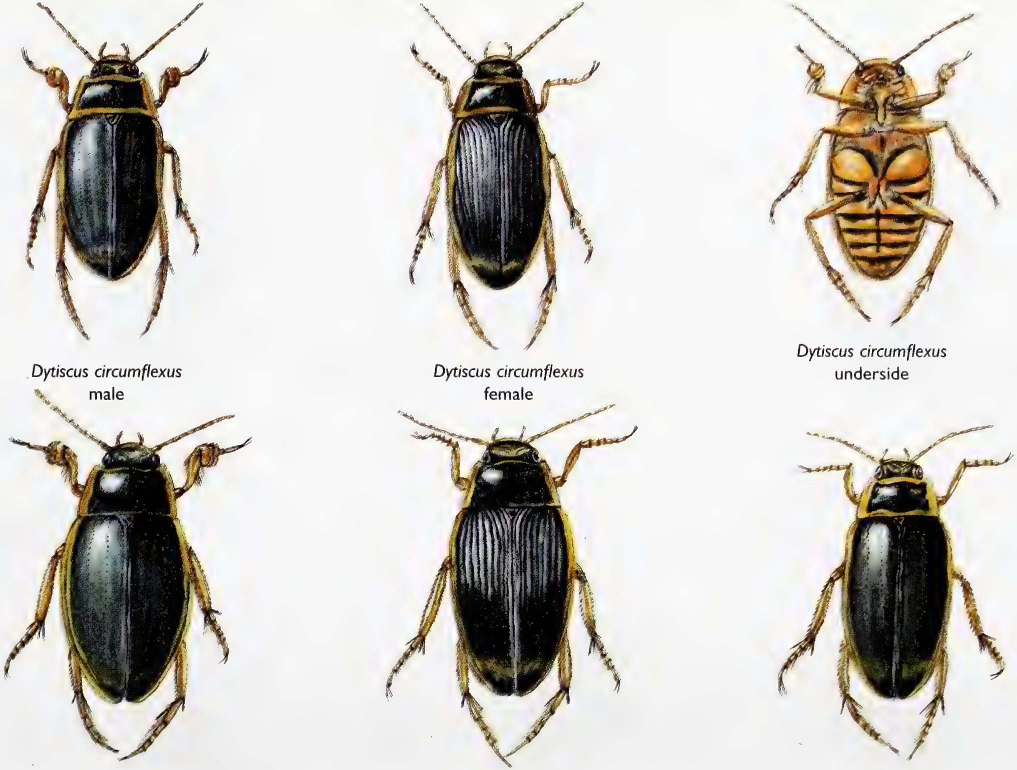
Dytiscus semisulcatus
male

Dytiscus semisulcatus
female

Dytiscus semisulcatus
underside

Plate 1. Great Diving Beetles: Dytiscidae.
Top row: *Dytiscus marginalis*; Bottom row: *Dytiscus semisulcatus* (all life-size)

Illustrations: Phil Wilkins



Dytiscus circumflexus
male

Dytiscus circumflexus
female

Dytiscus circumflexus
underside

Dytiscus dimidiatus
male

Dytiscus dimidiatus
female

Dytiscus circumcinctus
female

Plate 2. Great Diving Beetles: Dytiscidae

Top row: *Dytiscus circumflexus*; Bottom row: *Dytiscus dimidiatus, Dytiscus circumcinctus* (all life-size)

Illustrations: Phil Wilkins

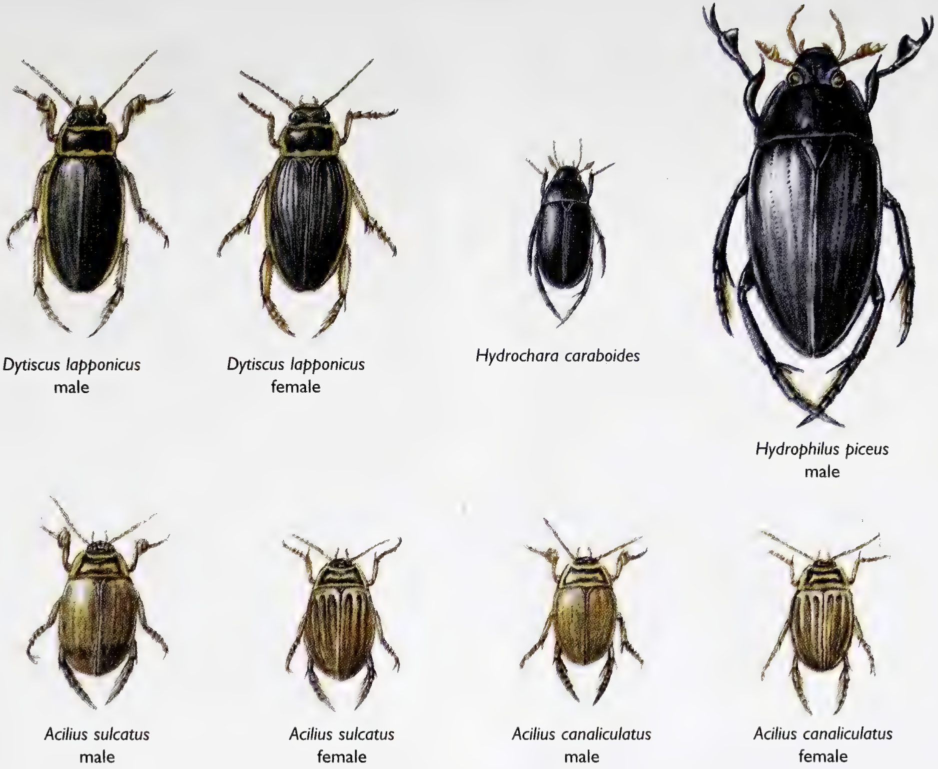

Dytiscus lapponicus male
Dytiscus lapponicus female
Hydrochara caraboides
Hydrophilus piceus male
Acilius sulcatus male
Acilius sulcatus female
Acilius canaliculatus male
Acilius canaliculatus female

Plate 3. Great (*Dytiscus*) and Lesser (*Acilius*) Diving Beetles: Dytiscidae; Great (*Hydrophilus*) and Lesser (*Hydrochara*) Silver Diving Beetles: Hydrophilidae. Top row from left: *Dytiscus lapponicus* is the smallest Great Diving Beetle found in the British Isles; the Lesser Silver Diving Beetle *Hydrochara caraboides* (RDB1 - Endangered) is a BAP Priority Species confined to two areas in Britain; the Great Silver Diving Beetle *Hydrophilus piceus* (RDB3 - Rare) is Britain's largest water beetle. Bottom row: *Acilius sulcatus*, which has black bases to its hind femora, is slightly larger than its rarer cousin *Acilius canaliculatus* (RDB3), whose hind femora are uniformly pale.
(All life-size)

Illustrations: Phil Wilkins

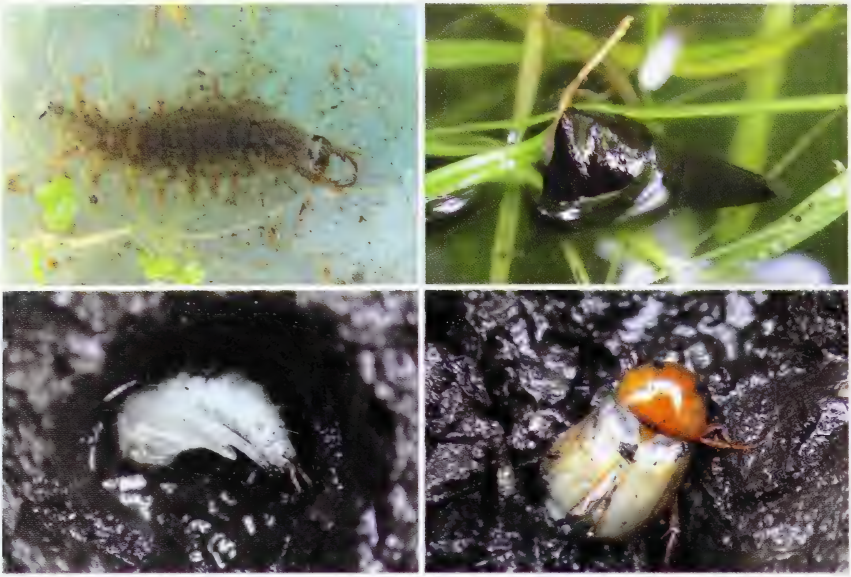


Plate 4. The life-cycle of the Lesser Silver Diving Beetle. Top left: larva, top right: egg cocoon, bottom left: pupa, bottom right: freshly emerged adult Photos: John Walters

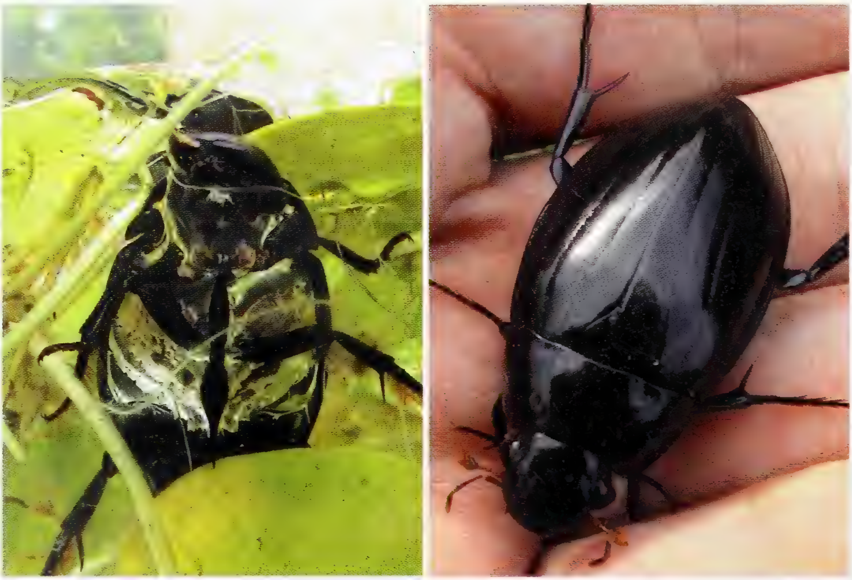


Plate 5. Great Silver Diving Beetle. Left: Great Silver Diving Beetle taking air. Right, the adult beetles can reach a length of 48 mm, but in spite of their obvious bulk, they are graceful and surprisingly powerful swimmers. Photos: Peter Sutton

Guest (2001) notes that larvae in the Cheshire colonies also take Mayfly (*Cloeon*) nymphs, and that the "rumoured requirement for Ramshorn snails seems improbable", suggesting that its typical mode of feeding would be incompatible with this prey item. However, it is subsequently revealed that a larva was observed lifting the empty shell of *Anisus leucostoma* clear of the water before discarding it, concluding that, "it may be assumed that such snails are taken if present". In the light of available evidence, it is likely that the larvae of this species are opportunists that will attempt to dispatch any manageable prey item that they come across during their excursions through floating vegetation. A very recent publication (Boyce, 2004) reinforces the fact that these larvae are clearly "ambush predators" which respond to movement, again questioning whether or not there is any coherent association with molluscs as a prey item.

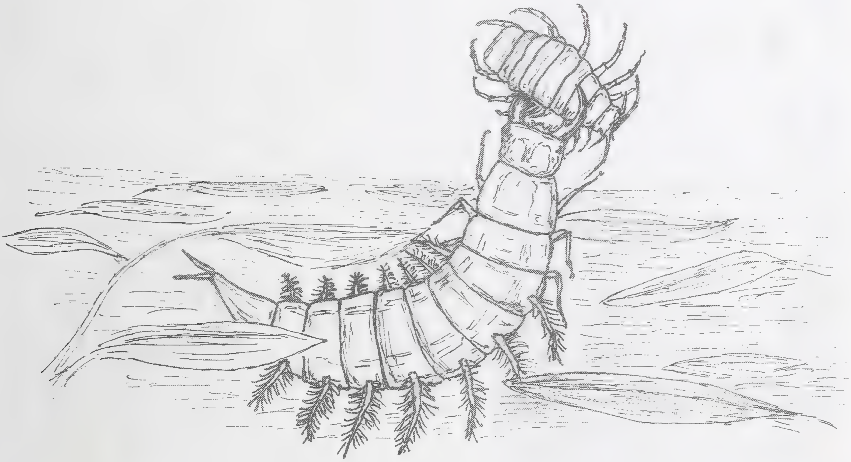


Figure 17. Lesser Silver Water Beetle larva feeding on Water Hog Louse *Asellus aquaticus*. These larvae, which catch their prey with an aggressive sideways 'snatch', lift it clear of the water while it is devoured (Balfour-Browne, 1958; Guest, 2001).

Pupation

When *Dytiscus* species (and other members of the Dytiscidae) are ready to pupate, they crawl out of the water to begin a search for a suitable pupation site in damp soil up to several metres away from the water's edge. They burrow into the soil and excavate a pupal cell three to four centimetres below the surface. The pupa takes about three weeks to mature and after casting the pupal case, the young adult remains underground for a further week to become fully hardened. Upon emerging as an adult, it makes its way to the water to spend the winter buried in mud at the bottom of the water body.

For *Acilius sulcatus*, Balfour-Browne (1950) found that, "on leaving the water the larva constructed a cell in the soil and, within a few days, became a pupa. From the time of entering the ground to the appearance of the imago occupied 28 days."

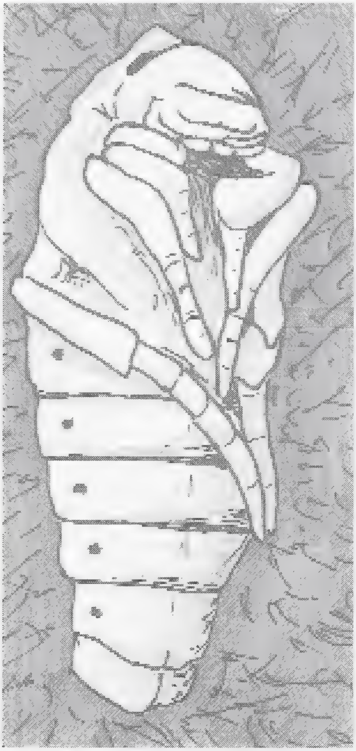


Figure 18. The pupae of *Dytiscus* species develop in cells constructed in the soil, typically several feet away from the water body from which the fully grown larvae emerged.

In much the same way, the hydrophilids leave the water and pupate in a cell excavated in damp soil or peat near to the waters edge. The Great Silver Water Beetle takes about six weeks to hatch from its pupal cell, whereas Lesser Silver Water Beetles are known to emerge as adults after as little as two weeks. Both species then make their way back to the water to overwinter.

The pupa of the Lesser Silver Water Beetle (Plate 4) is described by Boyce (2004): "The most striking feature of the pupa is the long bristles with which the sides of the abdomen are furnished. To begin with, it is white in colour, but towards eclosion, the pupa changes to a striking pale green. This colour is also noticeable on the abdomen and elytra of the newly emerged adult, with the colour gradually darkening over one or two days." The pupal bristles are illustrated clearly in Boyce's work, and the green colouration of the mature pupa, which is also just observable in the newly emerged adult, is shown in the English Nature (2003) leaflet.

The adults

The adults of the larger British water beetles have life-histories that are essentially dictated by the seasons. They appear in the autumn after pupation, overwinter at the bottom of water bodies, and when conditions become favourable, emerge to find a mate in spring. The adults will pair for several hours and the successful union will result in eggs being laid as early as March for dytiscids, and as late as April, perhaps even May for the larger hydrophilids.

The longevity of adults is well-documented, and both *Dytiscus* and *Hydrophilus* species have been kept for several years in captivity. Beebee (1991) notes that, "Apparently longevity is influenced by a beetle's sex life: individuals kept alone seem to live longer than those allowed to mate freely." Bateman (1890) elaborates: "One solitary (*Dytiscus*) beetle will sometimes survive two or three years passed in captivity; but when a male and a female are kept together it will generally be found that after a few months, perhaps owing to some conjugal misunderstanding, the male dies. Celibacy certainly in this case conduces to longevity", and adds the following point of interest, "The males, when both sexes are together, nearly always die first. The female, I believe, is more rapacious than her mate; she often eats him: he would eat her, no doubt, if he had the opportunity."

The adults of the Lesser Silver Water Beetle have been kept in captivity for over a year and Boyce (2004) states that, "it seems likely that *H. caraboides* may also live and breed over more than one season."

Feeding in adults

The dytiscids are strictly carnivorous as larvae and adults. Although the adults feed on a wide variety of aquatic life and are noted for their hunting abilities, they are not averse to feeding on carrion when it becomes available. Unlike the larvae, digestion is internal in the adult dytiscid and prey is torn up into pieces by the strong mandibles before it is swallowed. This process, according to Zahradnik and Chvala, (1989), for *Dytiscus* species is as follows: "The mandibles cut up the prey and pass it on to the maxillae, which pass it into the digestive tract. When the food has been partly digested, it continues into the muscular stomach (the proventriculus), where it is completely crushed. Coarse indigestible remains are disgorged via the mouth.

There is often a general implication that pervades entomological literature, through the use of statements such as, "(*H. piceus*) feeds on aquatic vegetation" (Zahradnik, 1977), which gives the impression that the adults of the two hydrophilids described are exclusively herbivorous. Thompson, Coldrey and Bernard (1985) describe "most adult hydrophilids" as being, "herbivores and *H. piceus* is particularly partial to clumps of dense algae,"[6] and Boyce (2004), in his assessment of the dietary requirements of the Lesser Silver Water Beetle states that, "the diet of the adult is poorly known, though it seems likely that it is a vegetarian, as is its close relative, *Hydrophilus piceus* (Hansen, 1987)."

In fact, it is clear that the diet of the Great Silver Water Beetle includes a variety of plant and animal material, and regarding its carnivorous tastes, Balfour-Browne (1958) writes, "Although the imagines are omnivorous in that they eat both animal and vegetable food, their main food under natural conditions seems to be snails, mostly *Limnaea* species. I have kept them for months on snails but Donisthorpe fed them on lettuce leaves. I don't know whether his specimens produced offspring, as mine did."

It is probable that the diet of the Lesser Silver Water Beetle is similarly diverse. Indeed, Stanek (1969) states that, "Beetles of the species *Hydrochara caraboides* will eat a dead fish down to the skeleton in a matter of minutes", and provides an extraordinary picture of five adult Lesser Silver Water Beetles feeding on the carcass of a dead fish where this appears to be the case. Regarding its herbivorous tastes, the English Nature leaflet (*loc. cit.*) states that the adults "show a strong preference for mats of Floating Sweet Grass *Glyceria fluitans*, which they rest in, and upon which they may feed."

Dispersal

The adults of all species described are strong fliers. They will readily disperse to find new breeding/feeding areas and can often travel considerable distances. Adult beetles are usually observed taking to the air in the evening and at night, and it has been noted that they will often fly into glass houses which they mistake for bodies of water.

The Great and Lesser Silver Water Beetles are good fliers and both species, in common with the Dytiscidae, are attracted to light. In some areas of Britain, *e.g.* Dungeness and Rye Harbour, the Great Silver Water Beetle is noted for its regular appearance at moth light traps, and it is generally accepted that some of these specimens are immigrants that occasionally arrive in the south-east of England from the Continent. In Cheshire and Somerset, the Lesser Silver Water Beetle is found in ponds and pools which are clearly not suitable for breeding, resulting from dispersal away from breeding centres, which usually occurs in September and possibly also in spring (Guest, 2001).

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[6] I can certainly concur with the Great Silver Water Beetle's appreciation for algae. In a freshly cut rhyne on the Somerset Levels, where aquatic plant growth included Frogbit *Hydrocharis morsus-ranae* and several floating mats of algae, I took five adult specimens from one mat in a single scoop using a modified landing net.

Observing our largest aquatic beetle take to the air is something to behold, and Beebee (1991) provides the following observation: "Watching them take off and rise vertically out of sight into the evening sky is a dramatic spectacle, very reminiscent of miniature helicopters in action."

Figure 19 shows the wing structure of a dytiscid beetle. The horny elytra are held up out of the way while the strong membranous hind wings are used for flight. Linssen (1959) reveals that, "The wing structure of the Dytiscidae is similar to that of the Tiger Beetles (Cicindelinae), a subfamily of active fliers, and to that of the closely related Ground Beetles (Carabinae), many of which have lost their powers of flight."

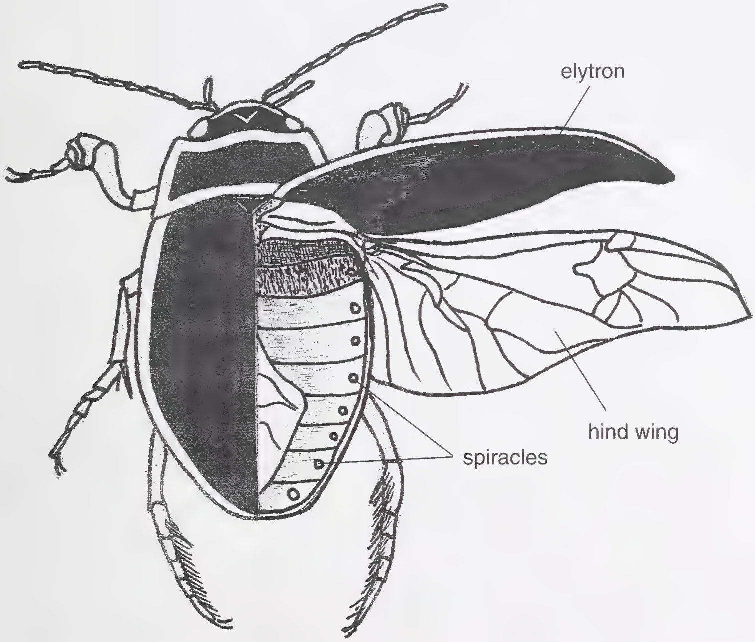

Figure 19. The upperside of a *Dytiscus* species showing wing structure.

The subject of migration has been of great interest to coleopterists, particularly with regard to the elucidation of causal factors. A recent article by Denton (2002) describes the winter colonisation of new ponds by 11 different species of water beetles between December 2001 and February 2002. It was observed that of the species that had colonised these ephemeral ponds, which were largely devoid of vegetation, there was a strong bias towards the Polyphaga. It was concluded that "The drive to keep ahead of predators/competitors is clearly strong"; and asks the question: "Are there other examples of Polyphaga dispersing ahead of Adephaga?"

Some species can be found at sites even after their water has been lost. Balfour-Browne (1940) writes, "Lifting the stones in dried up ponds or beds of streams often yields good results, as the beetles tend to remain in their haunts during a drought." Jackson (1952) has also recorded the presence of a species (*Agabus bipustulatus*) which is easily capable of dispersal, choosing to stay at sites that have lost their water through drought, and states that, "The stimulus to flight may depend on some physiological condition, such as hunger, or may be controlled by atmospheric conditions."

Could it be that these species are pre-empting the arrival of pioneer (prey) species when the site is re-filled with water, or is it nothing more than a strategy to conserve energy, based on the instinctive assumption that surrounding sites will also be in a similar condition?

While it is usual for many species to disperse after sunset, it is not unusual to observe daytime flights for some species. The stimulus to flight that arises from the threat of predation, or factors associated with overcrowding, may well account for these observations, and on two occasions, both in June, I have observed the Lesser Diving Beetle *Acilius sulcatus* take to the air during the heat of the day (Figure 20)[7]. I have also observed this activity on a somewhat larger scale in the New Forest, and during the course of a particularly hot day in July, my parked car became covered in the desiccated bodies of small dytiscid water beetles, that had landed on the shiny and extremely hot metal roof where they immediately expired.

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[7] This observation took place at Shapwick Heath NNR, which has become horribly overgrown. Indeed, Beebee (2002) writes: "A more or less complete lack of rhyne management on the Shapwick NNR over the past 10 years has resulted in mass overgrowth making netting virtually impossible. The overgrowth may or may not have affected the beetle fauna, but certainly prevents effective monitoring." A case where overgrowth has certainly affected one member of the beetle fauna at Shapwick is provided by Boyce (2004) regarding the declining fortunes of the rare (RDB3) *Laccornis oblongus* Stephens. Boyce writes: "There are recent records of this diving beetle from Shapwick Heath, Westhay Moor, Mudgely, Beckery and the Gordano Valley (Duff, 1993). During the current study a small population was found on Shapwick Heath. The habitat in which the species formerly occurred at Westhay Moor has been lost as a result of peat extraction (D. Bilton, pers. comm.). This species requires areas of shallow, seasonally flooded mossy fen. The area that it occurs in at Shapwick was formerly grazed and since this has ceased the site has become dominated by tall tussocks of purple moor-grass *Molinia caerulea*, and the areas of saturated mossy lawn where *Laccornis* has been found are now very small in extent. It is imperative that the dominance of tall vegetation, especially *Molinia* tussocks should be reduced. Ideally cattle grazing should be reintroduced to the site, but failing this, regular cutting of the vegetation may help to reduce the dominance of tall monocotyledons. The management of water levels at this site should ensure that it is flooded with shallow water during the spring and early summer."

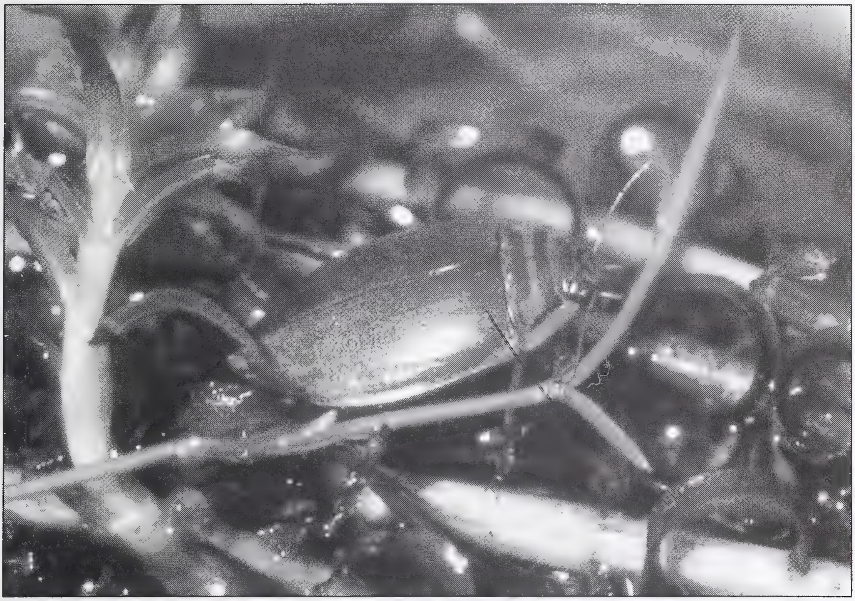


Figure 20 This male specimen of Lesser Diving Beetle *Acilius sulcatus* emerged from the well-vegetated peaty waters of a rhyne on the Somerset Levels before taking to the air.

Keys

There are a number of useful keys available for the identification of British water beetles. Particularly useful (although as described below, not without error) is the AIDGAP publication, *A key to the adults of British water beetles* (Friday, 1988), produced by the Field Studies Council and this excellent and financially accessible work is thoroughly recommended.

Keys for the identification of the Dytiscidae and Hydrophilidae, which are useful but generally inaccessible because they are out of print or expensive collectors items include:

> Fowler (1887-1891); Balfour-Browne (1940, 1950, 1953, 1958); Joy (1932); and Linssen (1959).

Publications of an academic nature containing useful keys include:

> Nilsson, A.N. and Holmen, M., (1995); Hansen, M., (1987); and Holmen, M., (1987).
>
> These works are recommended in terms of content but are often very expensive and should be obtained from libraries with good interlibrary loans services.

On a cautionary note, not all keys are 100% accurate and as with the use of any key or similar descriptive literature, there are occasional discrepancies. These range from the pedantic (to my mind the Lesser Silver Water Beetle is a shiny black species, whereas the English Nature leaflet (2003) describes it as "a uniform black-brown in colour"), to the misleading, as is the case for the description of *Dytiscus circumflexus* in Friday (1988), where the "greenish tinge" of the elytra is used to distinguish this species from *D. lapponicus*. (The elytra of *D. circumflexus* can range in colour from green to almost black.)

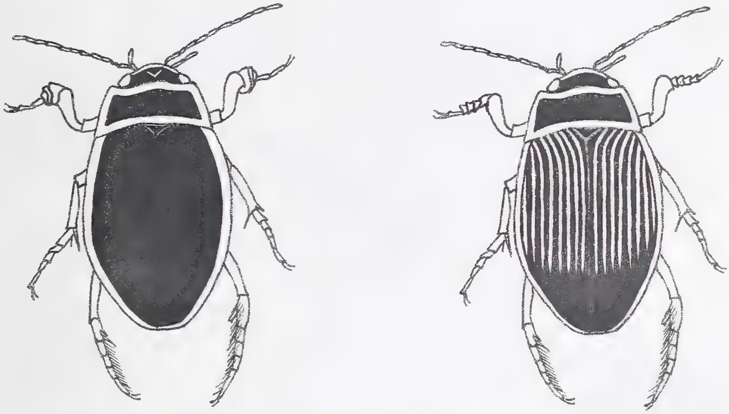
Identification of the larger Dytiscidae

There are only seven British water beetles that exceed 22 mm in length. Six are members of the genus, *Dytiscus*, and the other is the Great Silver Water Beetle, which can be separated immediately on the basis of its olive black colouration, short clubbed antennae and the spatial arrangement of its legs.

The typical form of the adults of *Dytiscus* species is shown in Figure 21. The head is not free, and is sunk into the prothorax. The forelegs of the males have characteristically modified tarsi compared to the 'simple' forelegs of the female. The hindlegs are modified for swimming, being broad, flat and endowed with swimming hairs.

The elytra of the males are smooth and highly polished, whereas the elytra of females are duller and sculptured with sulci (grooves). Of *Dytiscus* species, Balfour-Browne (1950) states that, "In *semisulcatus* there are nine grooves on each elytron, but our other species all have ten." However, females can exhibit dimorphism, and may occasionally be found as 'male-like females' possessing smooth, shiny elytra. For one species, *Dytiscus circumcinctus*, (see Plate 2) this form and the sulcated form are believed to occur in roughly equal numbers in Britain (Balfour-Browne, 1950; Linssen, 1959). In this case, male-like females can immediately be distinguished from males by the absence of modified tarsi on the forelegs (*e.g.* female *D. circumcinctus*, Plate 2.) (Balfour-Browne (1950) also provides general details of the frequency and European distribution of the sulcated and non-sulcated female forms of *Dytiscus* species.)

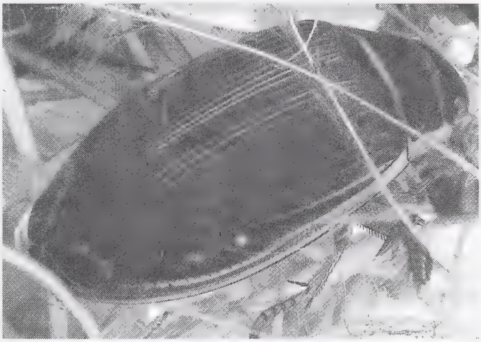
The shapes of the postcoxal processes of *Dytiscus* species provide a very useful aid to the identification of individual species and can be used in conjunction with other distinguishing characteristics, namely, the pattern of the yellow border around the pronotum, and also colouration of the underside, to make a correct species determination.



male

female

The upperside of the male *Dytiscus* is very smooth and shiny.



The upperside of the female *Dytiscus* is duller and usually sulcated (grooved). (The females of some species, *e.g. Dytiscus circumcinctus*, are dimorphic and may have smooth elytra like the males.)

Figure 21. A comparison of the uppersides of male and female *Dytiscus* species.

Figure 22 shows a pictorial key to the adults of British *Dytiscus* species, which can be used by working downwards through the illustrated characteristics for each species. In addition to the key characteristics described, further information to aid the identification of each species is also provided.

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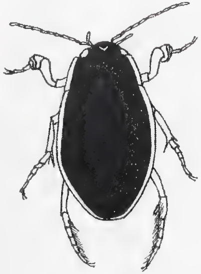
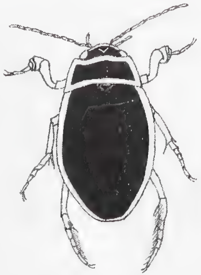
<td colspan="2">
Yellow edges present on sides of pronotum only (and possibly anterior edge, (Friday, 1988).)</td>
<td colspan="4">
Continuous yellow margin around pronotum</td>
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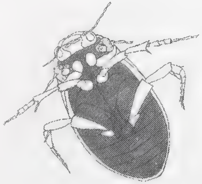
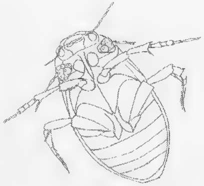
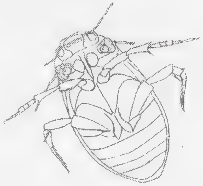
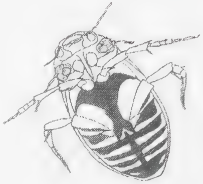
<td>
Underside black</td>
<td>
Underside yellow</td>
<td colspan="2">
Underside yellow</td>
<td colspan="2">
Underside yellow with black banding</td>
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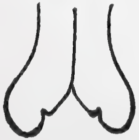
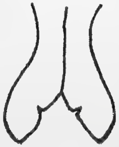
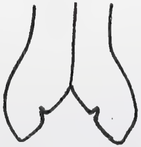
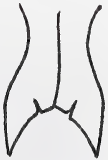
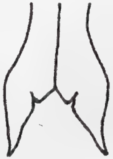
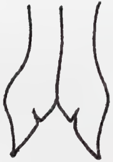
<td>
Postcoxal processes obviously rounded</td>
<td>
Postcoxal processes fairly blunt
Elytral grooves of female only extend 2/3rds of the way down its back</td>
<td>
Postcoxal processes fairly blunt</td>
<td>
Postcoxal processes pointed
Females often without sulcated (grooved) elytra</td>
<td>
Postcoxal processes long and sharply pointed
Black banding on underside more pronounced</td>
<td>
Postcoxal processes pointed
Black banding on underside less pronounced</td>
</tr>
</table>

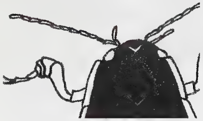
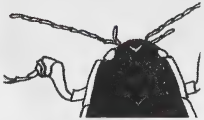
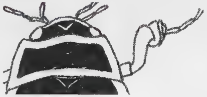
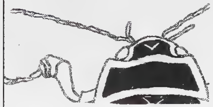
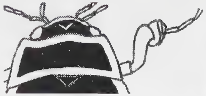
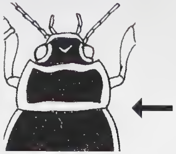
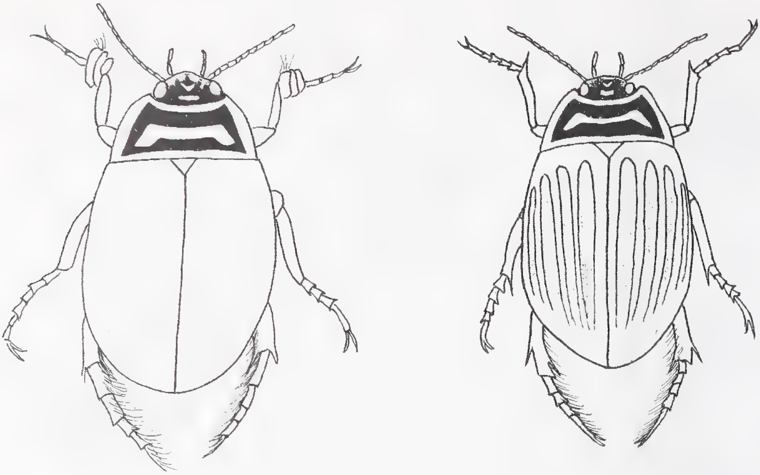
					
Does not have a narrow yellow margin around eyes	Does not have a narrow yellow margin around eyes	Does not have a narrow yellow margin around eye	Often has a narrow yellow margin around eyes	Does not have a narrow yellow margin around eyes	Obvious constriction ('waist') between thorax and abdomen Broad yellow margin around eyes
Size: 22 – 30 mm	Size: 30 – 38 mm	Size: 26 – 32 mm	Size: 26 – 32 mm	Size: 26 – 32 mm	Size: 22 – 28 mm
Dytiscus semisulcatus	***Dytiscus dimidiatus***	***Dytiscus marginalis***	***Dytiscus circumcinctus***	***Dytiscus circumflexus***	***Dytiscus lapponicus***

Figure 22. A key to the adults of British *Dytiscus* species.



Male
Males have smooth elytra

Female
Females have elytra with deep longitudinal grooves

Figure 23. A comparison of the uppersides of male and female *Acilius* species.

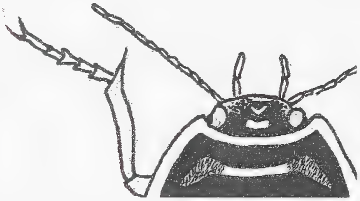
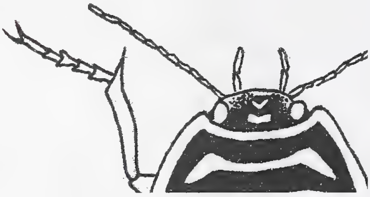
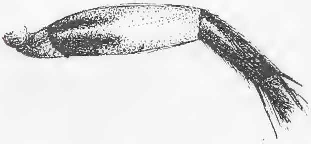
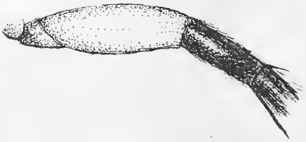
 Female with patches of long testaceous hair present on each side of the pale central band on the pronotum	 Female without, or with very fine patches of hair present on each side of the pale central band on the pronotum.
 Bases of hind femora are black	 Hind femora are uniformly pale yellow
Size: 16 – 18 mm	Size: 14 – 16 mm
Acilius sulcatus	***Acilius canaliculatus***

Figure 24. A key to the adults of British *Acilius* species.

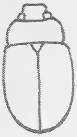
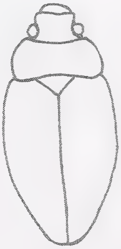
The typical form of the adults of *Acilius* species is shown in Figure 23. As with *Dytiscus* species, the head is sunk into the prothorax. Adult *Acilius* species also possess the previously mentioned general characteristics for the Dytiscidae. It is noticeable that the swimming hairs on the hind tarsi are very long. The head is yellow with characteristic markings on the vertex (*e.g.* Figure 20). The pronotum is also yellow with transverse black banding above and below the pale central band, and this black banding usually unites at the sides of the pronotum. The presence or absence of fine hair within the central pale band on the pronotum can be used to distinguish between females of the two British *Acilius* species.

The elytra appear to be brown but are yellow-brown with fine black stippling. In the male the elytra are almost smooth, having a somewhat "matt" appearance (*i.e.* not distinctly shiny). The female has three or four strongly raised ridges and the grooves in between are densely packed with hairs.

Identification of the larger Hydrophilidae

The differences between the Hydrophilidae and the Dytiscidae have been discussed. The Hydrophilinae, the subfamily represented by the two largest British members of the Hydrophilidae, can be separated from the other subfamilies (Berosinae, Limnebiinae, *etc.*) by an examination of the middle and hind tarsi, which are fringed with hairs and are strongly compressed for swimming.

Figure 25. A comparative illustrated key for the silver water beetles, *Hydrochara caraboides* and *Hydrophilus piceus*.

Hydrochara caraboides	*Hydrophilus piceus*
 Elytra shiny black, often with a greenish (or sometimes violet) tinge in sunlight; well-rounded towards rear apex and bear regular longitudinal lines of faint puncturation	 Elytra shiny olive-black with slight greenish tinge in sunlight; becomes acuminate (pointed) towards rear apex. Lines of puncturation on elytra clearly visible (Plate 5)

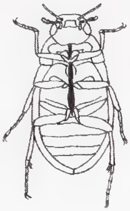
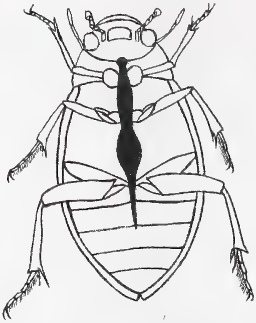
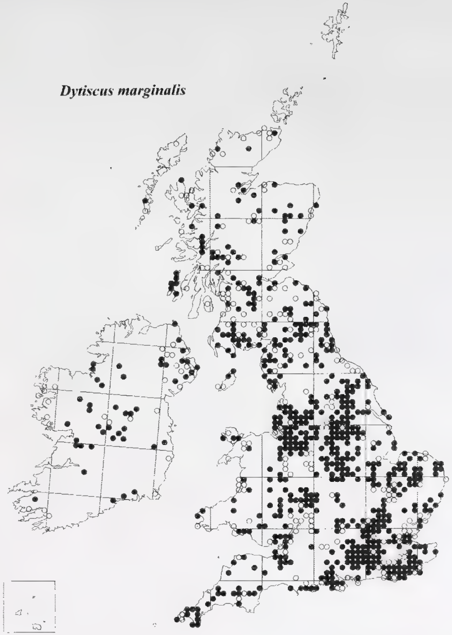
	
Mid-line (metasternal) keel on underside terminates between the hind coxae	Mid-line keel on underside extends well beyond the hind coxae and terminates in a sharp point (Plate 5)
Maxillary palps are reddish brown and considerably longer than the antennae. The antennae are reddish yellow and terminate in a black four-segmented club.	Maxillary palps are reddish brown and longer than the antennae. The antennae are yellowish brown and terminate in a four-segmented club (Plate 5)
Size: 14-18 mm	Size: 37-48 mm
Lesser Silver Water Beetle ***Hydrochara caraboides***	**Great Silver Water Beetle** ***Hydrophilus piceus***

Figure 25. continued.

Figure 25 shows a comparative illustrated key for the two largest British members of the Hydrophilidae, the Lesser Silver Water Beetle *Hydrochara caraboides* and the Great Silver Water Beetle *Hydrophilus piceus.*

The status and distribution of larger British water beetles

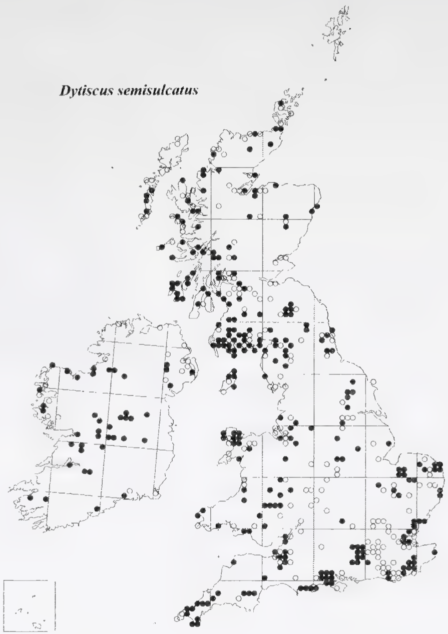
Please note: All distribution maps shown are provisional. Black circles represent post-1980 records and open circles represent pre-1980 records (including post-glacial fossil records)



Dytiscus marginalis

Figure 26. A provisional map showing the distribution of *Dytiscus marginalis* in the British Isles.

Dytiscus marginalis is by far the commonest and most widespread of all the British *Dytiscus* species. It can be found in a wide range of aquatic habitats across the British Isles, particularly still or slow flowing waters, and rarely in fast flowing water. This species can often be present in good numbers, even abundant, where it occurs.



Dytiscus semisulcatus

Figure 27. A provisional map showing the distribution of *Dytiscus semisulcatus* in the British Isles.

Dytiscus semisulcatus (whose name would clearly be more apt describing the abbreviated sulci of female *D. dimidiatus*) is the second commonest *Dytiscus* species in the British Isles. It is as equally widespread as the preceding species, but far more localised. This species has been found in a variety of still-water habitats.

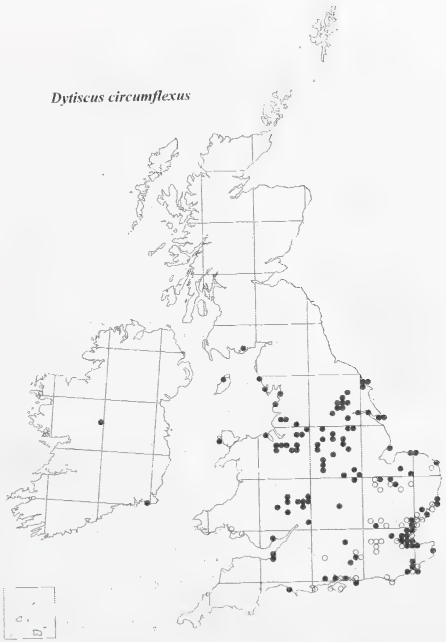


Figure 28. A provisional map showing the distribution of *Dytiscus circumflexus* in the British Isles.

Dytiscus circumflexus was formerly a very localised species in the British Isles. It used to be primarily associated with brackish coastal waters, but it appears that in recent years, it has increasingly been found in freshwater habitats away from the coast, and has been experiencing a range expansion over the last 50 years.

Ball (1986) allocated Notable B (Nationally scarce, B) status to this species (*i.e.* thought to occur in between 31 and 100 10km squares in the British Isles) and this status was upheld by Foster (in Hyman and Parsons, 1992) during a revision of the status of British water beetles.

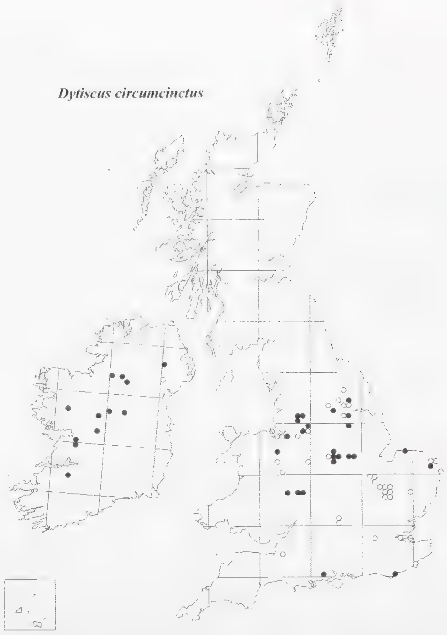
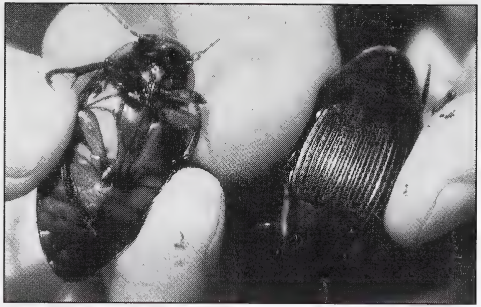


Figure 29. A provisional map showing the distribution of *Dytiscus circumcinctus* in the British Isles.

Dytiscus circumcinctus, which has been recorded from March through to October, has always been a scarce species in the British Isles, and was described by Linssen (1959) as being "rare". Ball (1986) and Foster (in: Hyman and Parsons, 1992) give the status of this species as Notable A (*i.e.* found in 30 or fewer 10 km squares).

Figure 31. Two female specimens of *Dytiscus dimidiatus* showing the abbreviated sulcation of the upperside and blunt postcoxal processes of the underside.



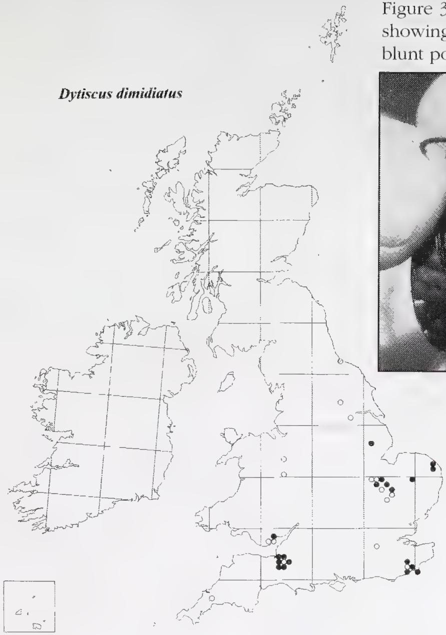


Figure 30. A provisional map showing the distribution of *Dytiscus dimidiatus* in the British Isles.

Dytiscus dimidiatus is the largest, almost certainly the rarest, and probably the most threatened of the *Dytiscus* species in the British Isles. It was originally given Notable A status by Ball (1986), but this was subsequently revised to RDB3 (Rare) status by Foster (in Hyman and Parsons, 1992).

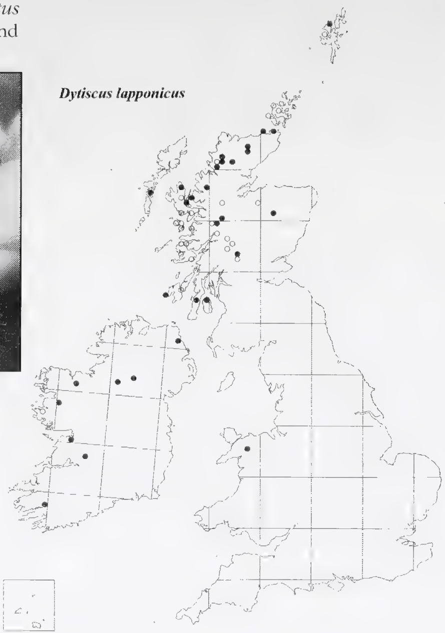


Figure 32. A provisional map showing the distribution of *Dytiscus lapponicus* in the British Isles.

Dytiscus lapponicus is a northern species confined almost solely to stony lochans in the Highlands of Scotland and Ireland. Its status has recently been revised from Notable A (Ball, 1986) to Notable B (Foster in: Hyman and Parsons, 1992).

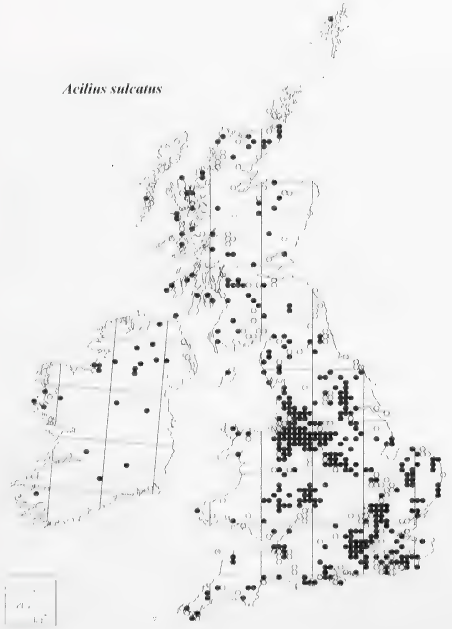


Figure 33. A provisional map showing the distribution of *Acilius sulcatus* in the British Isles.

Acilius sulcatus is common and widespread throughout the British Isles.

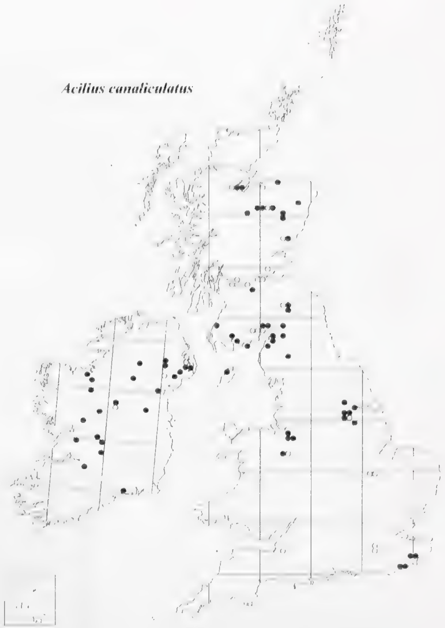


Figure 34. A provisional map showing the distribution of *Acilius canaliculatus* in the British Isles.

Acilius canaliculatus can usually be found in shaded peaty waters in fens and bogs. Its status, which has recently been revised from Notable B (Ball, 1986) to RDB3 (Foster in: Hyman and Parsons, 1992) reflects the disappearance of this species form many of its former haunts.

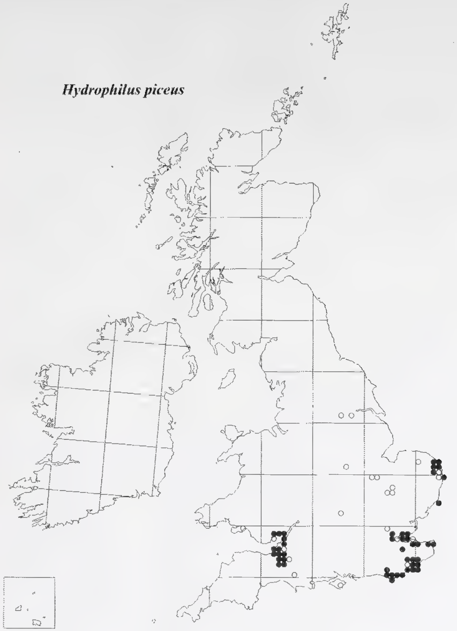


Figure 35. A provisional map showing the distribution of *Hydrophilus piceus* in the British Isles.

The Great Silver Water Beetle *Hydrophilus piceus* can be found in ancient wetlands, especially coastal grazing marshes in southern Britain. The current status of this species is RDB3 (Ball, 1986: Foster in: Hyman and Parsons, 1992)

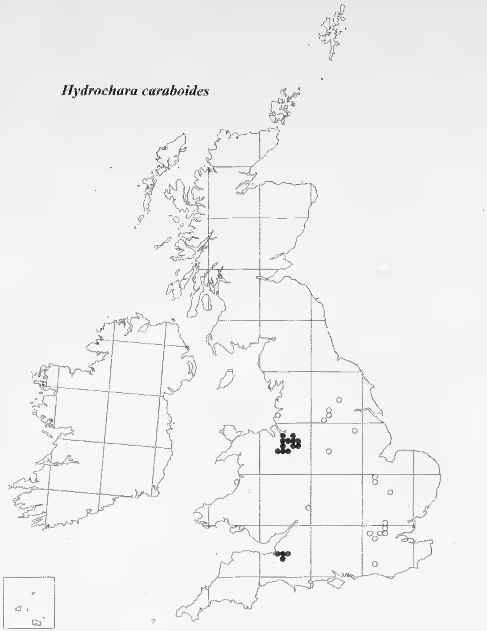


Figure 36. A provisional map showing the distribution of *Hydrochara caraboides* in the British Isles.

The status of the Lesser Silver Water Beetle *Hydrochara caraboides* (RDB1: Ball, Foster, *loc. cit.*) has recently been revised to RDB2 (Foster, in press).

Atlas Progress

Recently, considerable progress has been made regarding the development of the British and Irish Water Beetles Atlas, and formal publication of this work planned for 2005 (Foster, 2003; Foster, 2004b). This has involved the conversion of 285,000 water beetle records into 10 km square data, which will also become available for use through the National Biodiversity Network Gateway (www.nbn.org.uk).

There is still time to send records for inclusion in the forthcoming Atlas, which should be sent to: Professor Garth Foster, c/o The Balfour-Browne Club, 3 Eglinton Terrace, Ayr KA7 1JJ.

Balfour-Browne Club

The Balfour-Browne Club was founded by the father of water beetle study, Professor Frank Balfour-Browne[1]. This national society, (which includes members from all over the world), is dedicated to the study of aquatic coleopteran fauna and produces a journal, *Latissimus, Newsletter of the Balfour-Browne Club*, which is published as and when there is enough copy to fill each issue. The periodic levy for each trio of issues is, at present, £15- sterling/25 Euros. The society has, for many years, been in the capable hands of Professor Garth Foster, who is the editor of the journal and has also been responsible for collating the many thousands of records that form the basis of the forthcoming Atlas.

Membership enquiries can be sent to Professor Foster at the above address.

The Coleopterist

The Coleopterist is a journal which publishes material about beetles found in the British Isles and occasionally contains articles about our aquatic coleopteran fauna. Further details can be found on the website: www.coleopterist.org.uk, which also has a superb photo gallery showing, among other species, a number of our larger British water beetles.

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[1] A word must also be said about Prof. Balfour-Browne's son, Jack Balfour-Browne (JB-B), who was also an outstanding talent in this field and later became president of the Balfour-Browne Club. He was, by all accounts, an extraordinary gentleman, who, in spite of his physical ailments, succeeded in producing scientific research at the highest level. In an inspiring turn of events, when JB-B, (who had lost his hearing as a result of illness), was obliged to leave Magdalen College, Oxford, because of his deafness, he simply learnt to lip-read and took up residence at Caius College, Cambridge. It is reputed that he was eventually able to lip-read in at least five different languages. A list of JB-B's publications and more details of his remarkable life have been provided by Foster (2001).

Forthcoming meeting

A forthcoming meeting of the ***Water Beetle Special Interest Group*** will be held at the Royal Entomological Society (41 Queen's Gate, London, SW7 5HR) on **Wednesday 6th April 2005**.

Speakers include: Jeremy Biggs, *The impact of agriculture on water beetle assemblages: a comparison of ponds in semi-natural and farmed landscapes*; David Bilton, *Mitochondrial DNA studies of* Hydroporus *(Dytiscidae) in relation to conservation*; Jonty Denton, *Life history of the Spangled Water Beetle* Graphoderus zonatus *(Dytiscidae), in Britain*; Derek Lott, *The ecology of* Bidessus minutissimus *(Dytsicidae) on the Afon Rheidol*; Alan Stewart, *Recent work on the conservation of reed beetles (Chrysomelidae: Donaciinae)*; Garth Foster, *The Centenary of Britain's first ecological survey? Balfour-Browne in the Broads*; and Clive Turner, *Perspectives on conserving the water beetles of South Africa.*

Poster presentations will also be given by Andy Harmer, *Ecology of the Lesser Silver Water Beetle,* Hydrochara caraboides *(Hydrophilidae) on the Cheshire Plain*, and Pascale Nicolet.

For further details of this meeting, please contact The Royal Entomological Society, Tel: 020 7584 8361; e-mail reg@royensoc.co.uk

Future publications

Foster, G.N., (in press: 2005), A review of the scarce and threatened Coleoptera of Great Britain. Part 3, Aquatic Coleoptera. *JNCC Species Status Report*, No. 1. Peterborough, JNCC.

Phil Wilkins and Craig Macadam are steadily progressing with a new AES publication on the aquatic invertebrates of the British Isles.

The *Classic Entomological Sites* series by Peter Sutton will continue with articles describing the insect faunas of Shapwick Heath NNR, Somerset, and Studland Heath NNR, Dorset (which also has considerable aquatic invertebrate interest).

Figure illustrations, photographs and maps, and additional text illustrations:

Phil Wilkins: Figure 6 (illustrations), 13 (except *H. caraboides*) and 24 (hind femur illustrations).

John Walters: Figure 4 (photograph only), 11, 13 (*H. caraboides*) and all additional text illustrations.

Garth Foster: Figures 26-30 and 32-36 (Provisional distribution maps).

Peter Sutton: Figures 1-3, 4 (diagram only), 5, 6 (photographs), 7-10, 12, 14-23, 24 (except hind femur illustrations), 25, 31 and 37.

Acknowledgements

The authors would like to sincerely thank:

Professor Garth Foster, without whose considerable efforts regarding the progress of the water beetle recording scheme, and unwavering generosity regarding the constant requests for updated information over the past eight years, the status and distribution section of this article would not have been possible. In this respect the authors would also like to thank Dr Alan Morton for producing DMap which was used to generate the 10 km maps (Figures 26-30 and 32-36), and the Balfour-Browne Club which, through Professor Foster, has been instrumental in the provision of data;

John Walters for providing photographs and additional artwork; Dave Bilton (whose steady hand appears in figures 5, 15 and 31) and Clive Turner for their unrivalled skill with the net and without whom, the photographs of *Dytiscus dimidiatus* and *Hydrochara caraboides* would not have been possible; Andrew Duff for kind permission to draw on his Checklist data from the *Coleopterist* website; Dave Boyce and John Walters who kindly provided English Nature Report (591) and the associated EN leaflet respectively; and John Gumbrell, for kindly providing access to the Beam Brook Aquatic Nurseries catalogue.

Finally, PS would like to thank one Mr Adlington, who allowed his primary school classroom to become overrun with pots and tanks containing a myriad of aquatic wonders.

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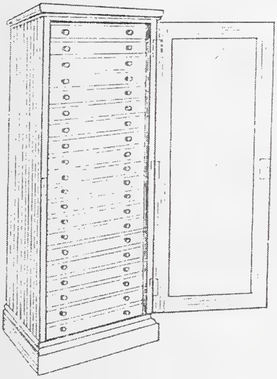

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> *"There remains a great deal to learn about our aquatic coleopterans, and much can be contributed by the enthusiastic wielder of a pond net. A rich water beetle fauna is undoubtedly a good indicator of freshwater habitat quality, and something we should ensure is present for future generations..."*
>
> Trevor Beebee

AES Bug Clubbers searching for aquatic insects at
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